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# Oil and Gas Developments in Pennsylvania in 1964

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# Oil and Gas Developments in Pennsylvania in 1964

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# OIL AND GAS DEVELOPMENTS IN PENNSYLVANIA IN 1964

by William S. Lytle,
William G. McGlade, and Walter R. Wagner

## ABSTRACT

Exploration in Pennsylvania during 1964 resulted in the discovery of 2 new gas fields, 1 new gas pool, and 3 deeper gas pools. Several oil and gas fields and pools discovered in previous years were extended by development drilling. Development drilling continued in the Youngsville-Sugar Grove Oil Field of Warren County where 106 new wells were completed in 1964. The daily production fell off slightly for this field to about 1,600 barrels of crude oil a day. Other shallow-sand areas namely Tionesta-Pleasantville in Forest and Venango Counties, Big Run in Jefferson and Indiana Counties, and New Bethlehem-Fairmount City in Clarion County became quite active during the year.

Deep development drilling was at an all time high in Erie and Crawford Counties where 92 wells were drilled by operators developing Medina (Lower Silurian) gas production and exploring for Gatesburg (Upper Cambrian) production. The six discoveries are: the 2 Oriskany discoveries in Bedford County—the Big Mountain Field and the Pennland Pool; 2 Gatesburg discoveries in Crawford County—the Scull Pool and the Beaver Center Pool; the Tuscarora discovery in Fayette County—the Heyn Pool; and the Oriskany discovery in Somerset County—the Somerset Field.

There were 939 new wells drilled and 27 wells deepened during 1964. Of the 939 new wells, 910 were in proven fields, 1 was drilled for waste disposal, and 28 were exploratory tests (all deep wells). Of the 910 proven field wells, 619 were drilled outside of underground gas storage and secondary-recovery projects, 278 wells in secondary-recovery projects, and 13 wells in gas storage. Of the 619 development wells outside secondary-recovery projects, 275 were gas wells, 242 oil wells, and 102 dry holes. The total footage drilled during the year was 2,196,095 feet.

Exploratory tests totaled 28, drilling a total of 174,906 feet of hole. Of the 28 exploratory tests, 6 were successful, and 22 were dry, giving a success ratio of 1 in 4.7. A new producing depth record was established in the Commonwealth during the year when the No. 1 Leo F. Heyn well in Fayette County found gas in commercial quantities in the Tuscarora (Medina, Lower Silurian) at a depth of 11,510 feet. A new drilling depth record was also established in 1964 when the No. 1 J. F. Long well in Centre County reached a total depth of 15,662 ft. in the Black River (Middle Ordovician).

Oil pipeline runs totaled 5,113,000 barrels of crude oil which is more than the 1963 production of 5,015,000 barrels. Proved oil reserves as of December 31, 1964 were estimated at 86,720,000 barrels. Gas produced totaled 85,322,000 MCF as compared with 92,340,000 MCF in 1963. Gas reserves were estimated at 1,243,575,000 MCF at the end of the year. The total reservoir capacity for the storage of natural gas in Pennsylvania is 521,514,000 MCF. The amount of distillate produced in 1964 was 59,000 barrels. The distillate reserve as of the last day of 1964 was 1,378,000 barrels.

Seismic activity in the Commonwealth was up about 11 percent over that of 1963. Seismic crews logged 101 weeks during the year. No gravity work was done but geological field parties were active. Considerable gravity work is to be done in the Crawford County area during 1965.

## INTRODUCTION

A summary of the oil and gas developments during 1964 is presented in this publication. The deep-well (those which reached rocks of Middle Devonian age or older) skeletal logs are shown in Table 12. For those deep wells drilled prior to 1950 the skeletal logs and other information on Pennsylvania's oil and gas activities are to be found in Bulletin M-31; similar information for the 1950 to 1954 period was published in Bulletin M-39, for the 1955 to 1959 period in Bulletin M-45, and for the years 1960, 1961, 1962, and 1963 in Progress Reports 158, 160, 165, and 166 all of the Fourth Series of the Pennsylvania Bureau of Topographic and Geologic Survey. Oil and gas developments of the shallow sands (Upper Devonian or younger) are described in Bulletin M-45 and Progress Reports 135, 139, 143, 144, 147, 150, 151, 154, 155, 157, 158, 160, 165, and 166 of the Survey.

The following errors in previous Progress Reports should be corrected: Progress Report No. 160, Page 50, well map no. 52 Earl C. Miller No. 1 the elevation should read 1061 feet. Progress Report No. 166, Page 39, well map no. 48 Hammermill No. 1 the location should read 8500 feet E of 80° 05′.

The deep wells from which drill cuttings were collected during the year are listed in Table 13. The Survey's "Catalogue of Deep Well Samples" (Inf. Circ. 16), as well as the supplemental lists published in Progress Reports 157, 158, 160, 165, 166 and on Table 13 of this publication, record the complete list of deep well samples on file with the Survey.

Thirty-two percent more deep wells were drilled in Pennsylvania in 1964 than in 1963. Of the 145 deep wells (Middle Devonian or older) drilled during the year, 28 were wildcats, the same number of wildcats as were drilled in 1963. The increase in the number of deep wells drilled during the year was due in part to the increase in the number of deep wells drilled for gas storage. Crawford County in northwestern Pennsylvania again had the greatest density of deep drilling with 62 completions during the year. Most of the drilling in this County was development drilling in the Kastle Pool. Erie county had the second largest number of deep well completions with 30. The 145 deep wells consisted of 96 gas wells, 12 drilled for gas storage, 1 drilled for waste disposal, and 36 dry holes. One of the discovery wells was an Oriskany gas well which was drilled deeper. Also one of the dry exploratory tests was abandoned just above the Tully. The total deep footage amounted to 702,754 ft. (feet). Rotary tools completed 126 deep wells during the year most of which were air rotary; 19 were completed with cable tools.

Drilling activity in the shallow-sand (Upper Devonian or younger) territory of western Pennsylvania increased 34 percent in 1964 over the amount drilled in 1963. At the beginning of the year the price of Pennsylvania Grade Crude Oil in the Bradford District was $4.63 per barrel. By January 11 all district prices had been lowered 15 cents where they remained for the rest of the year. There were 515 shallow-sand oil and gas development wells drilled during 1964 plus 1 gas storage well, 27 wells drilled deeper (gas, oil, and dry) and 278 wells drilled in connection with secondary recovery oil operations. The total shallow wells drilled and deepened in Pennsylvania during 1964 was 821 with a total footage of 1,493,341 ft.

The production during 1964 in the Commonwealth amounted to 5,113,000 bbls. (barrels) of crude oil and 85,322,000 MCF (thousand cubic feet) of natural gas. The proved recoverable reserves on December 31, 1964 were 86,720,000 bbls. of crude oil and 1,243,575,000 MCF of natural gas. The total reservoir capacity for storage of natural gas in Pennsylvania is 521,514,000 MCF. The amount stored in the Pennsylvania reservoirs is included in the reserve figure. More natural gas is stored in Pennsylvania than in any other state in the United States. Over 50 percent of the gas stored in the United States is stored in the Appalachian Basin. The amount of distillate produced in 1964 was 59,000 bbls. The distillate reserve as of the last day of 1964 was 1,378,000 bbls. The natural gas and distillate figures are those published by the American Gas Association.

A classification of the wells, exclusive of those drilled for gas storage and secondary-recovery purposes is given in Table 1, and oil and gas production is shown in Table 2.

The Pennsylvania Game Commission executed 8 leases totaling 9,813.4 acres at a bonus bid of $45,163.73 during 1964. The bonus payment covers the first year's rental. The royalties varied from $.04 to $.06435 per MCF and rentals from $1.00 to $5.00 per acre. Four productive shallow-sand gas wells and no dry holes were drilled on Game Commission acreage during the year. At the year's end a total of 33 leases totaling 26,865 acres containing 19 productive wells on 14 tracts were operating on Game Commission lands.

Table 1.—*Deep and shallow well completions Summary, Pennsylvania, 1964**

| *Completions* | *Oil* | *Gas* | *Dry* | *Total* | *Percent Successful* |
|---|---|---|---|---|---|
| Exploratory tests | 0 | 6 | 22 | 28 | 21 |
| Development wells* | 242 | 275 | 103 | 620 | 83 |
| Totals | 242 | 281 | 125 | 648 | 81 |

* Does not include wells drilled in connection with underground gas storage or secondary-recovery operations.

The Pennsylvania Department of Forests and Waters received acceptable bids for 5 tracts totaling 44,825 acres. This wildcat acreage drew bonus bids ranging from $1.50 to $3.25 per acre. The overall average was $2.58 per acre. A total bonus of $110,460 was received for the tracts which require a royalty of $.04 per MCF. Four tracts in the Leidy storage field totaling 44,143 acres were leased in 1964. An exploratory well will be drilled under the lease terms which will evaluate the Ordovician and Silurian reservoirs starting 1000 feet below the Oriskany sandstone, the storage reservoir in the field.

Table 2.—*Production in Pennsylvania, 1964*

|  | *1963* | *1964* | *Cumulative total to 12/31/64* | *Reserves 12/31/64* |
|---|---|---|---|---|
| Oil (bbls.) | 5,014,000 | 5,113,000 | 1,251,337,000 | 86,720,000 |
| Gas (Mcf) | 92,340,000 | 85,322,000 | 7,773,708,000 | 1,243,575,000 |

At present the Department of Forests and Waters has a total of 160,044 acres under lease for oil and gas exploration and development. In 1964 a total income of $733,150 was realized from rentals and royalties. Royalty payments amounted to $351,569 for 6,571,711 MCF of gas produced on Department lands. Rental payments totaling $355,882 were realized from undeveloped leases, storage, pipeline rights-of-way, and compressor and pumping stations.

The 46 producing oil wells acquired in 1963 as part of the Moraine State Park, Butler County produced 6,070 barrels of oil bringing an income of $25,495 to the Department.

Seven wells were drilled on State Forest lands during the year. Of these 5 were gas producers and 2 were dry holes.

In 1964 eight seismic survey permits were issued to 3 companies. Geophysical surveys consisting of approximately 35 miles of traverse were conducted across State Forest lands which resulted in the evaluation of portions of 7 geologic structures in Bedford, Elk, Huntingdon, Fayette, Cameron, Potter, Clinton, Indiana, and Cambria Counties.

Seismic activity in the Commonwealth was up about 11 percent over that of 1963. Seismic crews logged 101 weeks during the year. No gravity work was done but geological field parties were active. Considerable gravity work is to be done in the Crawford County area during 1965.

Figure 1 shows the annual gas production in the State since 1882. Table 3 lists some of the major companies and the amount of acreage they held in Pennsylvania as of November 1, 1964.

Table 3.—*Major company acreage in Pennsylvania as of November 1, 1964*

| *Company* | *Acreage* |
|---|---|
| Humble | 366,219 |
| Cities Service | 65,599 |
| Mobil | 193,996 |
| New York State Natural | 544,000 |
| Phillips | 154,000 |
| Pure | 20,347 |
| Shell | 211,300 |
| Sun | 81,635 |
| Sunray DX | 12,800 |
| Texaco | 5,000 |
| Tidewater | 4,790 |
| Total | 1,659,686 |

## ACKNOWLEDGMENTS

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## SHALLOW-SAND EXPLORATION AND DEVELOPMENT

Shallow-sand exploration and development continued an upward trend commenced in 1962 with the introduction of hydrofracturing to oil and gas fields of Pennsylvania.

During 1964 a total of 515 shallow wells were drilled exclusive of wells drilled deeper and those drilled in connection with underground

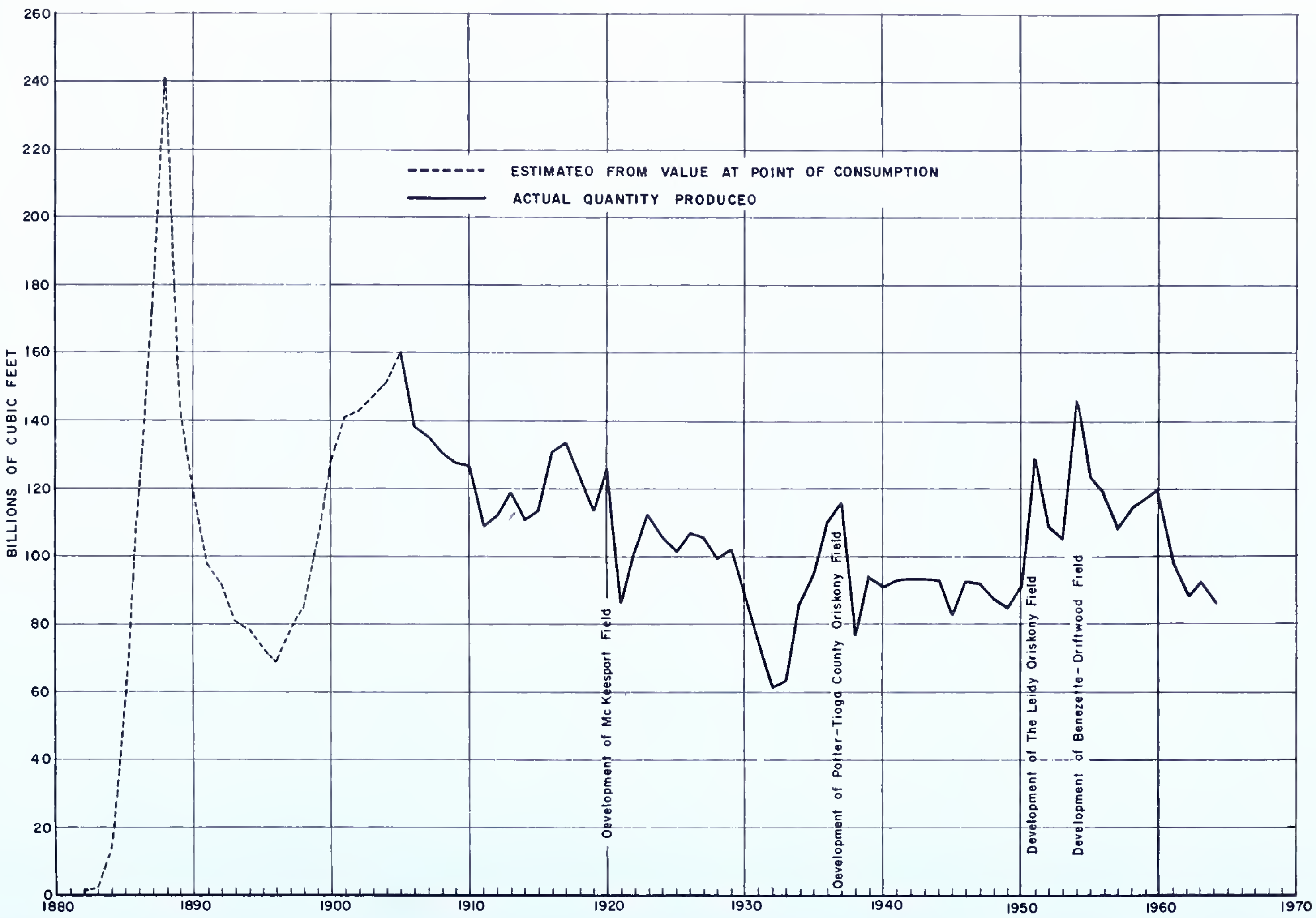


Figure 1. Annual production of natural gas in Pennsylvania.

gas storage and the secondary recovery of oil. This is the highest number of shallow wells drilled since 1950 when 551 wells were drilled. Figure 2 shows a series of graphs expressing the degree of activity of shallow-well drilling between 1950 and 1964.

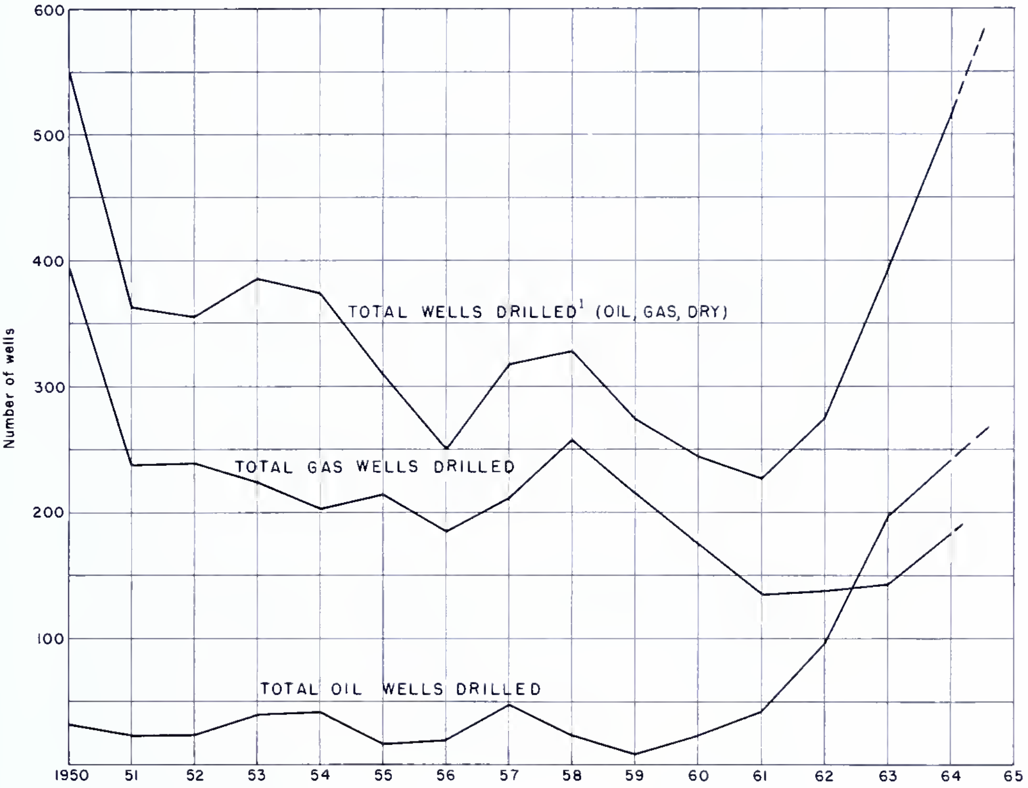


**Figure 2.** Total shallow-sand wells drilled between 1950 and 1964. [1]Excludes all wells drilled deeper, and all wells drilled for underground storage or secondary recovery oil operations.

The wells drilled in 1964 are categorized as follows: 184 gas wells, 242 oil wells and 89 dry holes; in addition, 1 gas storage well, 27 wells drilled deeper (gas, oil and dry) and 278 wells drilled in connection with secondary recovery oil operations are included. The total number of shallow wells drilled and deepened in Pennsylvania during 1964 was 821 with a total footage of 1,493,341 feet. Table 4 shows the shallow-sand well completions in Pennsylvania exclusive of those drilled in connection with secondary recovery oil operations and underground gas storage. Table 5 notes the results of deepening 27 shallow wells in 1964. The stratigraphic positions of the various shallow oil and gas-producing sands in western Pennsylvania are displayed by the three regional columnar sections in Figure 3.

The 242 oil wells drilled in 1964 show an increase of 46 over 1963, and an inspection of the graph on Figure 2 shows a dramatic increase

## Table 4.—*shallow-sand well completions in Pennsylvania, 1964**

| | TOTAL | | GAS | | | OIL | | | DRY | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. of Wells | Aver. Total Depth (Feet) | No. of Wells | Aver. Init. Open-Flow (MCFPD) | Aver. Total Depth (Feet) | No. of Wells | Aver. Init. Prod. (BOPD) | Aver. Total Depth (Feet) | No. of Wells | Aver. Total Depth (Feet) |
| Allegheny | 4 | 3,057 | 3 | 449 | 3,006 | . . | . . | . . | 1 | 3,209 |
| Armstrong | 50 | 2,824 | 40 | 525 | 3,151 | 3 | 126 | 941 | 7 | 1,756 |
| Butler | 13 | 2,041 | 3 | . . | 2,751 | 6 | 3½ | 1,634 | 4 | 2,119 |
| Clarion | 47 | 1,794 | 14 | 194 | 2,585 | 16 | 40 | 1,000 | 17 | 1,834 |
| Crawford | 2 | 706 | . . | . . | . . | 2 | 1 | 706 | . . | . . |
| Elk | 12 | 2,409 | 3 | 178 | 2,281 | 4 | . . | 2,400 | 5 | 2,492 |
| Erie | 1 | 645 | 1 | 15 | 645 | . . | . . | . . | . . | . . |
| Fayette | 10 | 2,272 | 7 | 2,061 | 2,099 | . . | . . | . . | 3 | 2,676 |
| Forest | 25 | 1,613 | 5 | 44 | 2,607 | 12 | 40 | 1,182 | 8 | 1,639 |
| Greene | 2 | 658 | . . | . . | . . | . . | . . | . . | 2 | 658 |
| Indiana | 63 | 3,382 | 59 | 899 | 3,357 | . . | . . | . . | 4 | 3,739 |
| Jefferson | 26 | 3,376 | 26 | 880 | 3,376 | . . | . . | . . | . . | . . |
| McKean | 9 | 3,151 | 2 | 155 | 1,953 | 4 | . . | 1,700 | 3 | 2,550 |
| Potter | 4 | 1,387 | . . | . . | . . | 4 | 1 | 1,387 | . . | . . |
| Venango | 48 | 872 | 1 | 4 | 1,900 | 37 | 25 | 861 | 10 | 812 |
| Warren | 172 | 826 | 3 | 130 | 1,434 | 153 | 38 | 870 | 16 | 919 |
| Washington | 5 | 2,605 | 2 | 342 | 3,200 | 1 | 1 | 2,286 | 2 | 2,168 |
| Westmoreland | 22 | 3,444 | 15 | 565 | 3,393 | . . | . . | . . | 7 | 3,552 |
| Total | 515 | 1,898 | 184 | 702 | 3,087 | 242 | 36 | 965 | 89 | 1,862 |

* *Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.*

### Table 5.—*Shallow-sand wells deepened in Pennsylvania, 1964**

| | *TOTAL* | | *GAS* | | | *OIL* | | | *DRY* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *No. of Wells* | *Aver. Amt. Deepened (Feet)* | *No. of Wells* | *Aver. Init. Open-Flow (MCFPD)* | *Aver. Amt. Deepened (Feet)* | *No. of Wells* | *Aver. Init. Prod. (BOPD)* | *Aver. Amt. Deepened (Feet)* | *No. of Wells* | *Aver. Amt. Deepened (Feet)* |
| Armstrong | 8 | 1,052 | 8 | 512 | 1,052 | .. | .. | .. | .. | .. |
| Butler | 1 | 1,455 | 1 | 12 | 1,455 | .. | .. | .. | .. | .. |
| Clarion | 3 | 799 | 3 | 37 | 799 | .. | .. | .. | .. | .. |
| Forest | 3 | 193 | 1 | 30 | 67 | 2 | 16 | 256 | .. | .. |
| Greene | 1 | 186 | 1 | .. | 186 | .. | .. | .. | .. | .. |
| Indiana | 9 | 1,532 | 9 | 686 | 1,532 | .. | .. | .. | .. | .. |
| Westmoreland | 2 | 1,583 | 2 | 2,012 | 1,583 | .. | .. | .. | .. | .. |
| Total | 27 | 1,095 | 25 | 578 | 1,162 | 2 | 16 | 256 | .. | .. |

* *Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.*

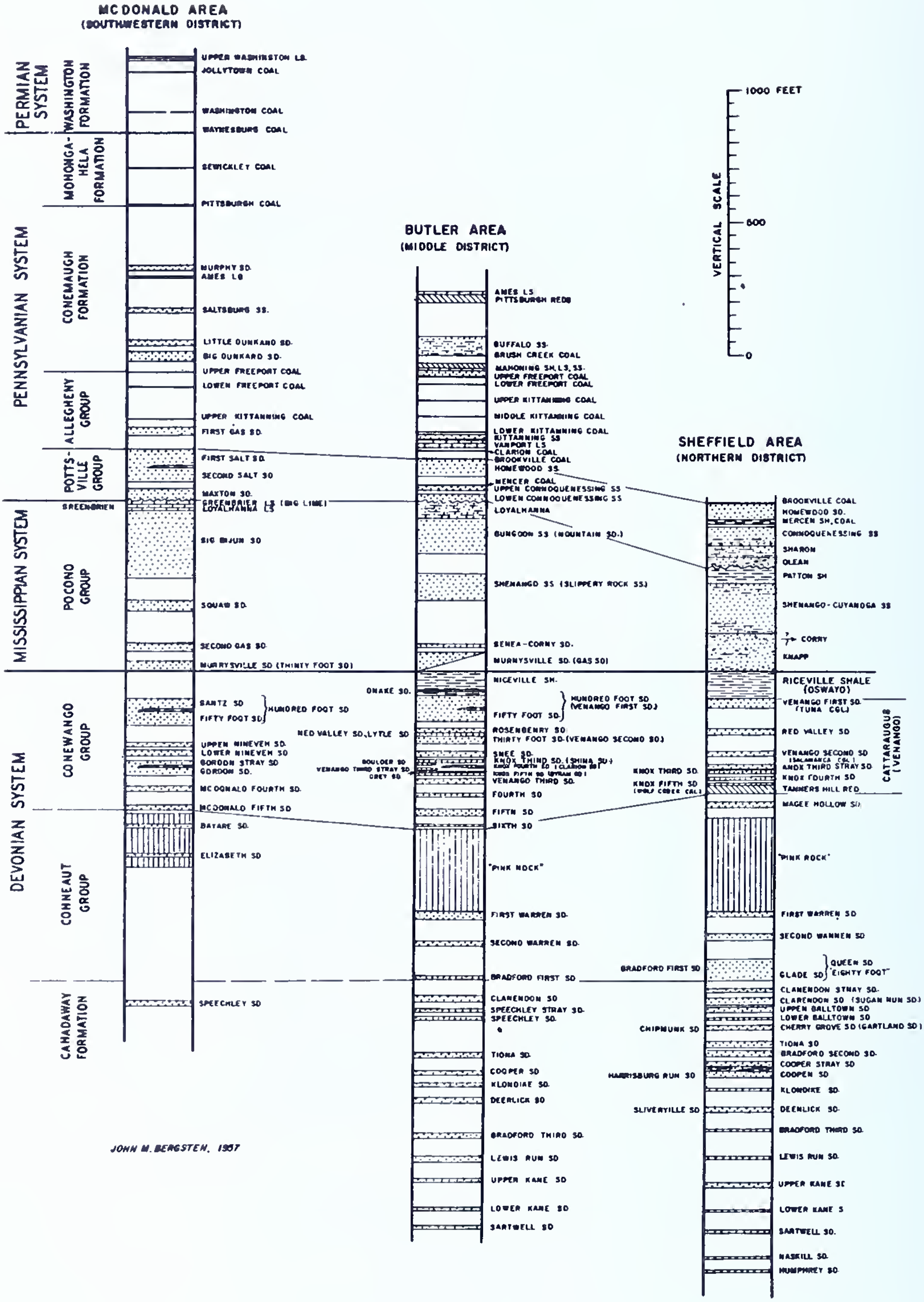


Figure 3. Columnar sections showing oil and gas sands of western Pennsylvania.

of oil well drilling beginning in 1962. Due to the method of reporting shallow well activity in Pennsylvania, it is probable that up to 50 oil wells are not included in this total and thus the total primary oil-well drilling during 1964 would be even more spectacular. Most of the oil wells completed during the year were stimulated by notching and hydrofracturing techniques.

During 1964, 184 gas wells were drilled. A combined, total, initial open-flow capacity of 179 of these wells gauged 125,675 MCFGPD (thousand cubic feet of gas per day) compared with 71,740 MCFGPD gauged from 141 wells drilled in 1963. In wells where reservoir stimulation was utilized, the open-flow gauges obtained after stimulation were used in the computations.

Reservoir stimulation (hydrofracturing) was applied to 149 of the 184 new gas wells and yielded a total open-flow capacity of 97,289 MCFGPD. A comparison of open-flow gauges taken before and after stimulation shows the following results: 121 wells gauged a total open-flow capacity of 3109 MCFGPD before stimulation; after stimulation, these same 121 wells gauged a total open-flow capacity of 80,417 MCFGPD. Of the 25 gas wells completed by drilling deeper, gauges of 24 showed a combined total initial open flow of 14,445 MCFGPD. Stimulation was applied to 15 of these wells. A comparison of before- and after-stimulation production rates shows that the total initial open-flow capacity of 12 wells before stimulation was 223 MCFGPD and 11,153 MCFGPD after stimulation.

## SHALLOW-SAND GAS DEVELOPMENTS

During 1964, 184 new shallow gas wells were completed in Pennsylvania. This is an increase of 40 wells over the reported total of 1963. The increase is due to the additional activity in Armstrong and Jefferson Counties, e.g. Armstrong County (1963—27 wells, 1964—40 wells), Jefferson County (1963—6 wells, 1964—26 wells). The remainder of the gas-producing counties showed little or no change. The majority of wells drilled for shallow gas production in 1964 were scheduled to Speechley, Balltown, Tiona, Bradford and Kane objectives.

An area of new shallow gas exploration and development is located southeast of the village of Big Run, Gaskill Township, Jefferson County and Banks Township, Indiana County (see Site No. 5, Figure 4). All of the 26 gas wells reported from Jefferson County as well as five wells in Banks Township, Indiana County were located in this area. Completions of these wells are from Kane, Bradford, Balltown, Tiona, and Speechley reservoirs. The 26 wells located in Jefferson County were stimulated by hydrofracturing and gauged a total open-flow capacity of 22,882 MCFGPD. Comparison data illustrating before- and after-stimulation gauges show 668 MCFGPD as the combined total open-flow capacity for 18 wells before hydrofracturing as compared with 17,254 MCFGPD for the same 18 wells after stimulation.

Indiana County continued to lead in shallow gas well activity as it did in 1963. Fifty-nine (59) new gas wells (including the 5 in Banks Township) were completed in this county of which 53 were stimulated by hydrofracturing. Total open-flow capacity of these wells was 53,065 MCFGPD. The total open-flow capacity of 51 of these wells was 1667 MCFGPD before fracturing as compared with 43,215 MCFGPD after fracturing.

During 1964, 40 new gas wells were drilled in Armstrong County, 15 in Westmoreland County and 14 in Clarion County. One (1) new shallow gas storage well was drilled this year. This well is located in the Tepe gas storage field in Allegheny County.

## SHALLOW-SAND OIL DEVELOPMENTS

During 1964, 242 primary oil well completions were reported in Pennsylvania. This total shows an increase of 58 wells over the 1963 completions. Figure 2 graphically indicates the continuation of a sharp upward trend of primary oil-well drilling which began in 1962.

Figure 4 is a map of western Pennsylvania showing the oil and gas-producing areas. The sites of important shallow oil activities during 1964 are outlined on this map and are detailed below:

1. *Youngsville-Sugar Grove Fields (Warren County)*

These two fields, located in the Youngsville 15-minute quadrangle, showed a combined total of 106 new oil well completions for 1964. This total is off 26 wells from the feverish activity of 1963. The decrease is a reflection in part of the poor market conditions which existed during the early part of 1964. All of these completions were from the Glade sandstone reservoir and most of the wells were stimulated by hydrofracturing. This area is described in a detailed geological study of the Youngsville quadrangle recently released by the Pennsylvania Geological Survey (Bulletin M53; McGlade, 1964).

2. *Section 9 (I)—Corry Quadrangle (Warren County)*

This is an area of new drilling for Venango objectives, viz., the Venango "Fourth sand". During 1964, 22 oil completions and 3 dry holes were drilled here. Most of the wells have been stimulated by hydrofracturing and initial potentials have averaged about 20 BOPD (barrel of oil per day). Average total depths of these wells does not exceed 700 feet.

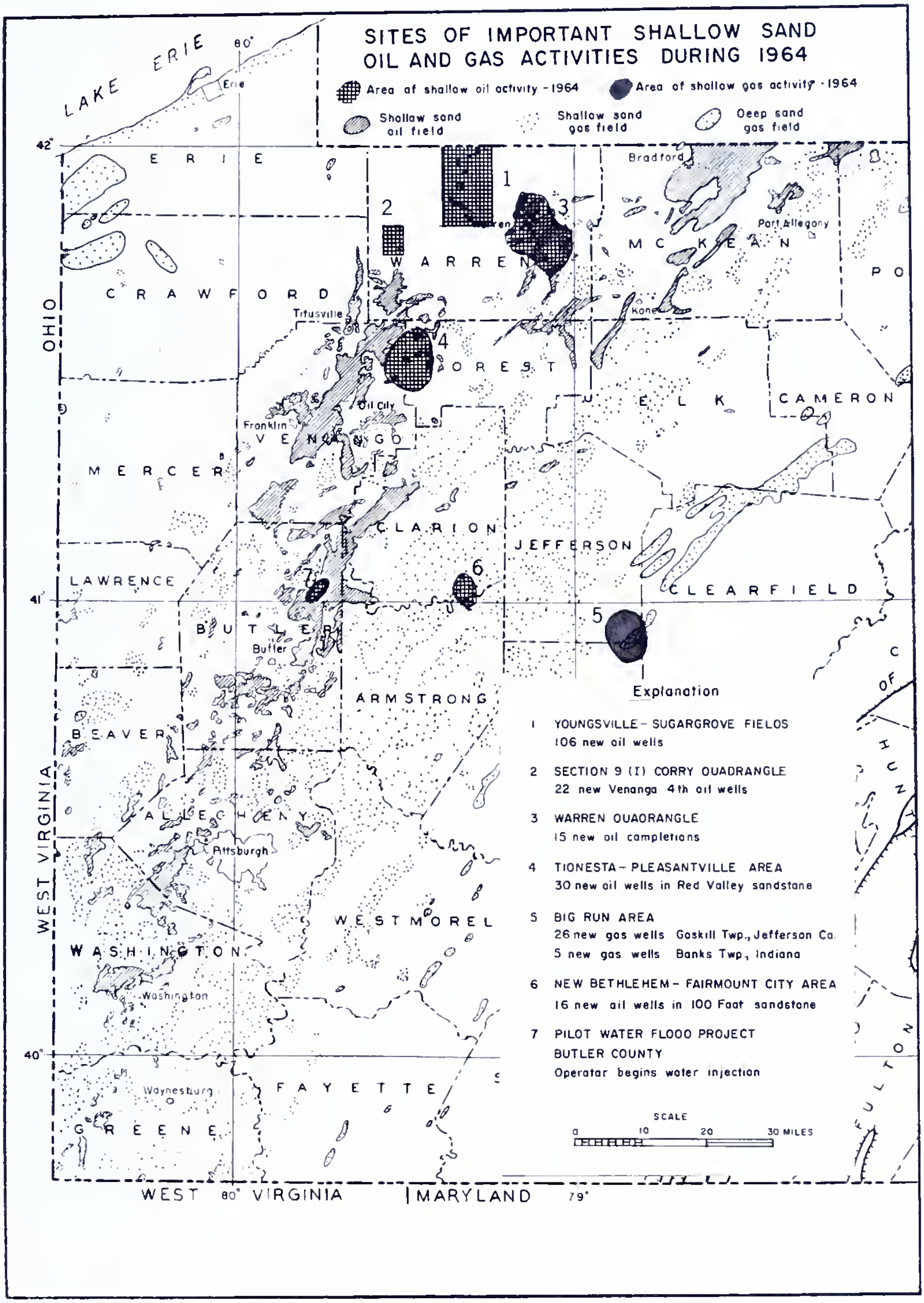

SITES OF IMPORTANT SHALLOW SAND OIL AND GAS ACTIVITIES DURING 1964
Area of shallow oil activity - 1964
Area of shallow gas activity - 1964
Shallow sand oil field
Shallow sand gas field
Deep sand gas field
LAKE ERIE
Erie
ERIE
CRAWFORD
WARREN
MC KEAN
Bradford
Port Allegany
Kane
PO
Titusville
FOREST
ELK
CAMERON
Oil City
Franklin
VENANGO
MERCER
CLARION
JEFFERSON
CLEARFIELD
LAWRENCE
BUTLER
Butler
ARMSTRONG
BEAVER
ALLEGHENY
Pittsburgh
WESTMOREL
WASHINGTON
Washington
Waynesburg
GREENE
FAYETTE
OHIO
WEST VIRGINIA
MARYLAND
HUNTINGDON
FULTON
42°
41°
40°
80°
79°
1
2
3
4
5
6
7
Explanation
1 YOUNGSVILLE - SUGARGROVE FIELDS
106 new oil wells
2 SECTION 9 (I) CORRY QUADRANGLE
22 new Venango 4th oil wells
3 WARREN QUADRANGLE
15 new oil completions
4 TIONESTA - PLEASANTVILLE AREA
30 new oil wells in Red Valley sandstone
5 BIG RUN AREA
26 new gas wells Gaskill Twp., Jefferson Co.
5 new gas wells Banks Twp., Indiana
6 NEW BETHLEHEM - FAIRMOUNT CITY AREA
16 new oil wells in 100 Foot sandstone
7 PILOT WATER FLOOD PROJECT
BUTLER COUNTY
Operator begins water injection
SCALE
0 10 20 30 MILES

Figure 4. Shallow drilling activities during 1964.

### 3. *Warren Quadrangle (Warren County)*

Fifteen (15) oil completions were reported from the Clarendon and Glade reservoirs of this area which is located adjacent to the city of Warren. The 1964 activity is down slightly from the 1963 level, but the results from reservoir stimulation are still encouraging enough to insure continuing activity in the area.

### 4. *Tionesta-Pleasantville Area (Forest, Venango Counties)*

This area of new activity is located in Harmony Township, Forest County and Allegheny Township, Venango County and lies east and west of State Route No. 36 between Tionesta and Pleasantville.

The Red Valley sand is the productive oil reservoir here. This unit has responded very well to notching and hydrofracturing and gauges of up to 70 BOPD have been reported, although it is probable that higher initial potentials have been obtained in this area. The base of the Red Valley sand lies some 30 to 40 feet above the top of the Venango Second sand. During 1964, 30 oil wells were completed in the Tionesta-Pleasantville area.

During 1964, drilling for Venango sand objectives continued in the area southwest of Tionesta in Venango County, particularly in Cranberry, Oakland and Sugar Creek Townships.

### 5. *Big Run Area (Gaskill Township, Jefferson County-Banks Township, Indiana County)*

See discussion under Shallow-sand Gas Developments above.

### 6. *New Bethlehem-Fairmount City Area (Clarion County)*

Sixteen (16) oil wells were completed during 1964 in this area which is located slightly over 1 mile south of an old One-Hundred-Foot sand oil field operated by the Preston Oil Company. The producing reservoir in this newly drilled field is also the One-Hundred-Foot sand. Although responses to stimulation have been more than satisfactory, activity has been curtailed because of the relatively low market price offered for the crude. Operators report that this One-Hundred-Foot crude oil contains a lower lubricating oil fraction than the normal Pennsylvania Grade Crude, thus lowering the market price substantially.

### 7. *Pilot Project—Water Flood of Knox Sand-Foxburg Quadrangle (Butler County)*

During the latter part of 1964, J. G. Dyer and the Consolidated Royalty Oil Company applied injection water to their pilot water-flood project in the Knox sand of northeastern Butler County. This test is situated in an area of old Knox sand production in Parker Township known as the Bear Creek Field. The operator reports that 30 wells, both newly drilled and rehabilitated wells are involved in the project. The Knox Third sand, the objective reservoir in this test, is taking the injection water in a satisfactory manner and the operator is optimistic about the success of the project.

Oil production in the Commonwealth averaged 14,008 BOPD as compared with 13,737 BOPD for 1963. This is an increase of about 2 percent. It is the first increase in annual production over the previous year since 1960. It is the first increase in annual production over the previous year due entirely to primary production since 1940 when the production from the Music Mountain Field reached its peak. Crude oil prices dropped 15 cents during January and then remained constant for the rest of the year. Table 6 shows the price of crude oil during the year in the 3 marketing districts in Pennsylvania.

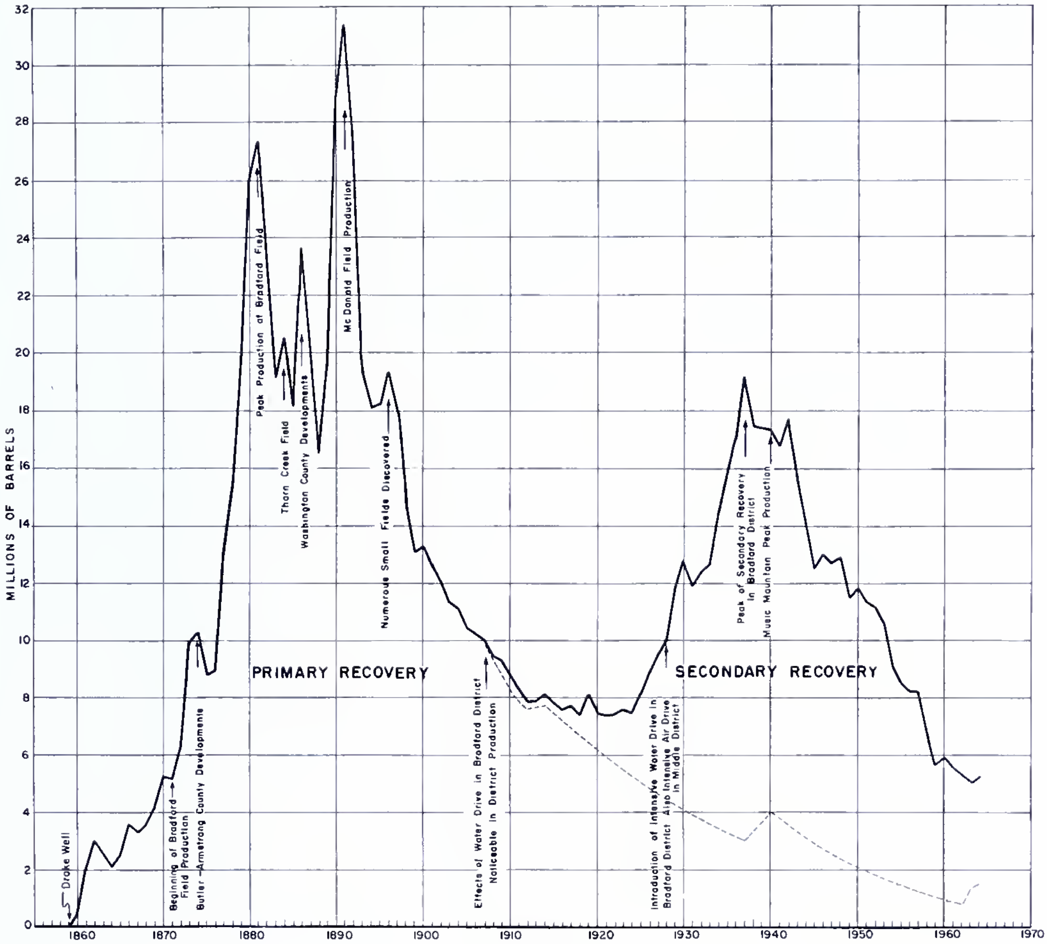


Figure 5. Annual production of crude oil in Pennsylvania.

Table 6.—*Price per barrel of crude oil, 1964*

| *Date* | *Northern or Bradford District* | *Middle or Venango District* | *Southwestern District* |
|---|---|---|---|
| Jan. 1, 1964 | $4.63 | $4.35 | $4.08 |
| Jan. 11, 1964 | $4.48 | $4.20 | $3.93 |
| Dec. 31, 1964 | $4.48 | $4.20 | $3.93 |

About 34 percent of the wells drilled in 1964 in the Bradford Field in Pennsylvania were hydraulically fractured. The daily average production for that part of the field in Pennsylvania amounted to 8,449 BOPD, an amount which represents about 60 percent of the total oil production of the Commonwealth in 1964. This is a decrease percentage wise of 6 percent from that of 1963.

The average daily oil production of the Middle and Southwestern Districts of Pennsylvania was 5,559 BOPD in 1964 as compared with 4,637 BOPD in 1963, an increase of about 20 percent. The increase is due to the continued development in the Warren County area and the new developments in the Pleasantville-Tionesta and New Bethlehem-Fairmount City areas.

Table 7.—*Oil wells and crude oil production in Pennsylvania by counties, 1963**

| *County* | *Number of producing oil wells as of 12/31/63* | *Crude oil production (bbls.)* |
|---|---|---|
| Allegheny | 389 | 117,044 |
| Armstrong | 141 | 10,349 |
| Beaver | 122 | 8,432 |
| Butler | 2,370 | 150,988 |
| Clarion | 844 | 51,707 |
| Crawford | 472 | 14,810 |
| Elk | 651 | 42,634 |
| Fayette | 4 | 260 |
| Forest | 1,024 | 73,526 |
| Greene | 300 | 53,167 |
| Jefferson | 87 | 3,407 |
| McKean | 22,469 | 3,305,403 |
| Mercer | 195 | 2,713 |
| Potter | 370 | 46,774 |
| Tioga | 16 | 504 |
| Venango | 15,439 | 297,906 |
| Warren | 8,299 | 527,177 |
| Washington | 831 | 156,872 |
| Total | 54,023 | 4,863,673 |

* Data from Bureau of Statistics, Department of Internal Affairs, Harrisburg, Pennsylvania.

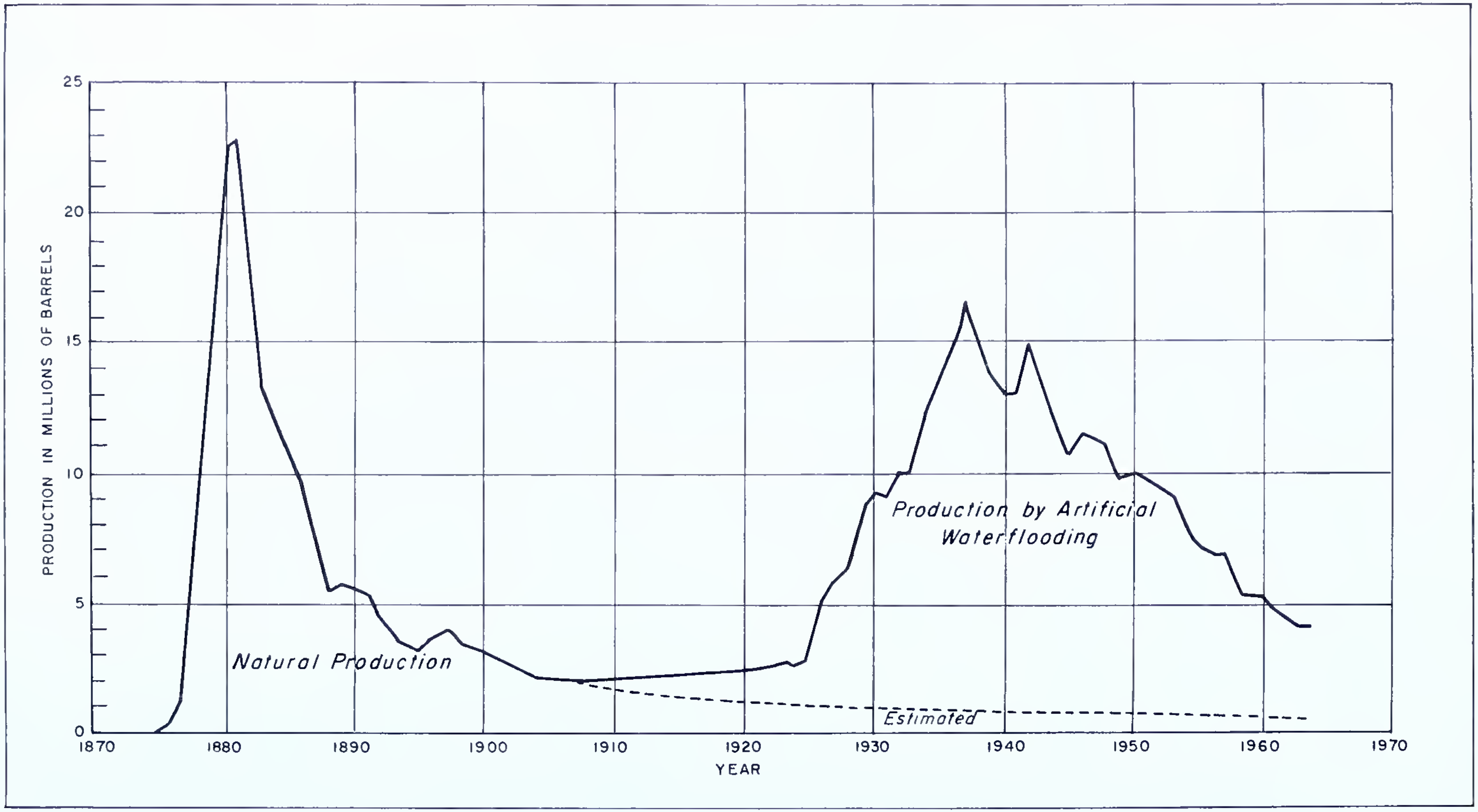
Table 7 shows the number of oil wells and crude oil production by counties in Pennsylvania for 1963.

## COMMENTS—SHALLOW WELL ACTIVITY

As noted above, shallow well drilling for primary oil and gas is continuing on an upward trend. This rise in activity is expected to continue into 1965 as the re-examination of virtually all of the old oil and gas fields of western Pennsylvania moves ahead.

While these old fields and adjacent, sparsely drilled areas are scrutinized from the geological and reservoir engineering points of view, new completion techniques are constantly being developed and improved such as new propping agents and fluid additives for hydrofracturing and completion hardware, etc.

In addition to the activity involved in the discovery of and the extension of new primary reserves of oil and gas, attention is being directed to the new thermal technique of injecting steam into the reservoir to stimulate oil recovery. This method, which has proven so successful in parts of Texas and California with the high viscosity crudes, is being tested by the Pennzoil Company, Schwab and Schwab, and the Miami Oil Company. Schwab and Schwab has conducted short-term steam injection tests in the Venango sandstones near White Church located in Section 7 (G) of the Tidioute 15-minute quadrangle, Forest County. Miami Oil Company has conducted the same type of test in the old Triumph Hill Field located in Section 1 (A) of the Tidioute 15-minute quadrangle, Warren County. The Wolf's Head Oil Refining Company and the Pennzoil Company, in a cooperative effort, have been conducting a test steam injection process on the Grant Lease of the Wolf's Head Oil Refining Company situated in Venango County, near Franklin, Pennsylvania. According to a press release distributed by the Engineering Department of the Pennzoil Company, dated December 20, 1964, "The process will be applied in the form of a steam flood in an area which has already been intensely drilled and produced to the economic limit of primary oil recovery. The test will be conducted on a newly developed 1 acre, typical five-spot pattern, consisting of 4 injection wells and 1 producing well. Four additional primary producing wells located in the immediate area affected by the steam flood will be retained and reconditioned for observation. The mechanical design of the steam generating equipment by Struthers-Wells Corporation, Warren, Pennsylvania, is basically a forced circulation water vaporizer with a single pass, once-through coil system. The unit is designed to produce steam at a rate of 21,000 pounds per hour at a maximum of 600°F. and 1500



CRUDE OIL PRODUCTION CURVE OF THE BRADFORD DISTRICT, PA. & N.Y.
(Music Mt. Field excluded)

**Figure 6.** Crude oil production curve of the Bradford District, Pennsylvania and New York.
(Music Mt. Field excluded)

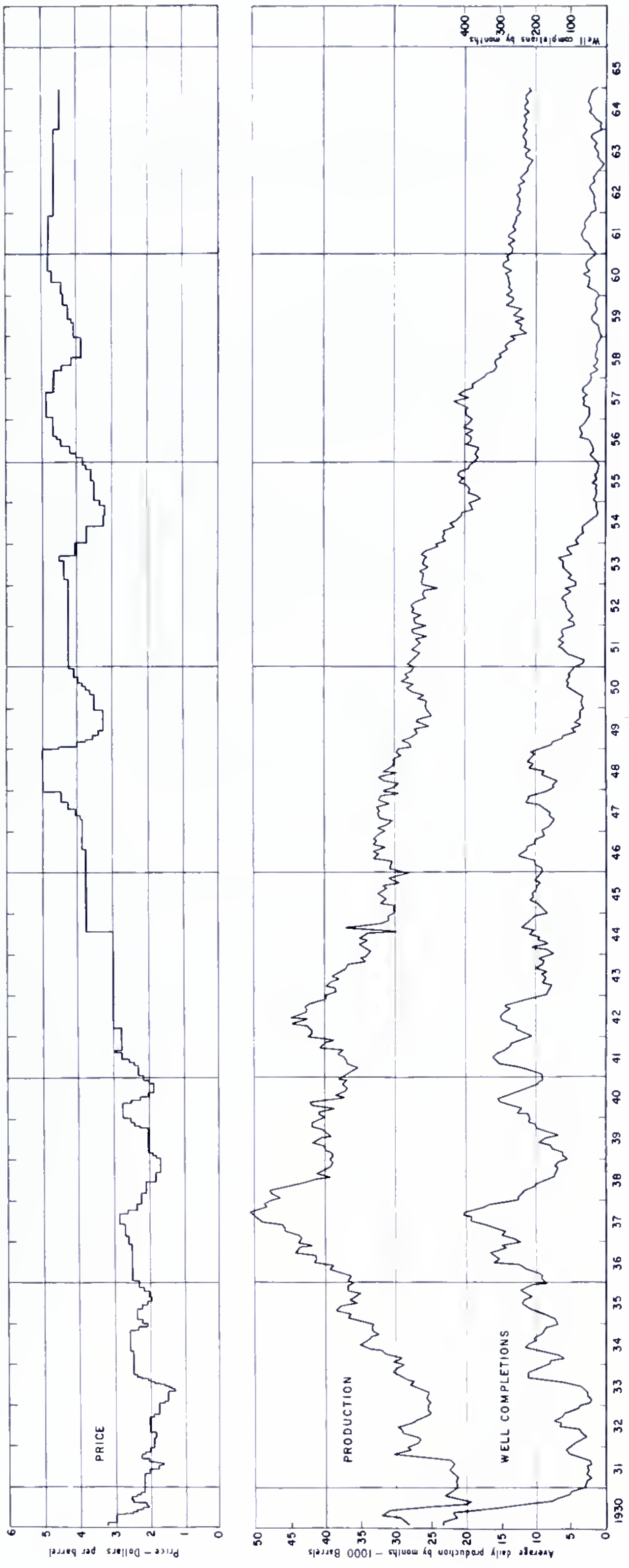


Figure 7. Crude oil prices, production, and well completions—Bradford Field.

psi, temperature and pressure respectively." The Pennzoil Company is also investigating the possibility of installing a similar test in the Bradford Field, McKean County.

During 1965 the effectiveness of the steam method in low viscosity crudes should be thoroughly evaluated and an economic success for this type of secondary oil recovery will undoubtedly increase the drilling activity.

## DEEP-SAND EXPLORATION AND DEVELOPMENT

Pennsylvania's deep-sand exploration during 1964 resulted in the discovery of 2 new gas fields, 1 new gas pool, and 3 deeper gas pools. Several gas fields and pools discovered in previous years were extended by development drilling. Deep development drilling was at an all time high in Erie and Crawford Counties where 92 wells were drilled by operators developing Medina gas production and exploring for Gatesburg production. The same number of wildcats were drilled in 1964 as in 1963 a total of 28 each year. A new producing depth record was established in the Commonwealth during the year when the No. 1 Leo F. Heyn well in Fayette County (No. 115, Figure 10, and Table 12) found gas in commercial quantities in the Tuscarora (Medina, Lower Silurian) at a depth of 11,510 ft. A new drilling depth record was also established in

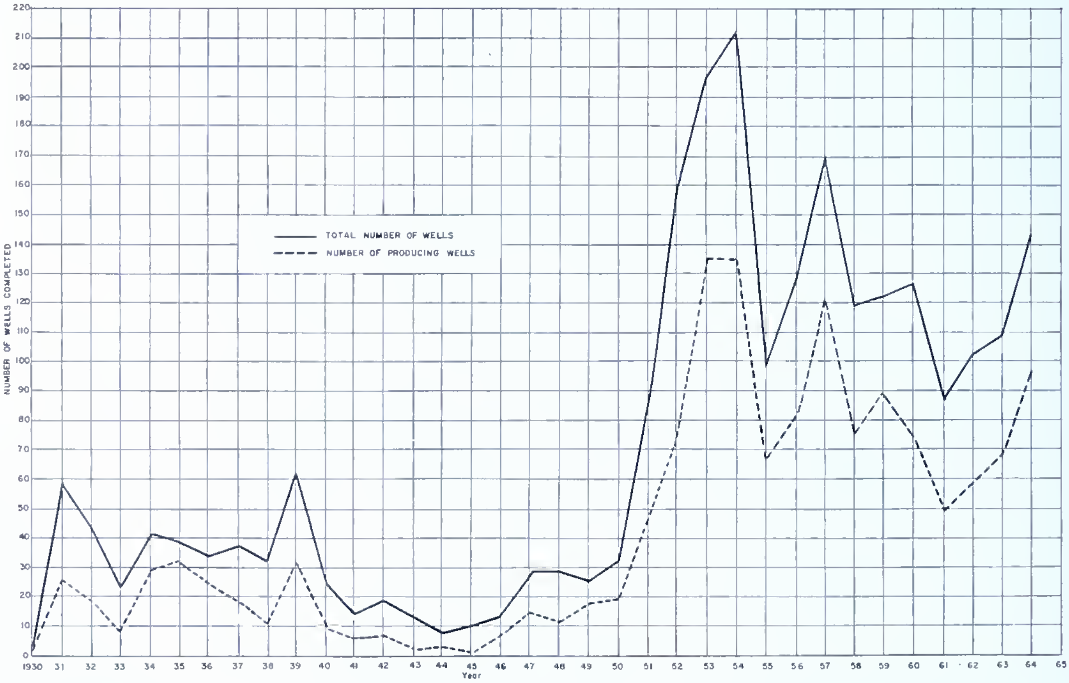


Figure 8. Annual rate of deep sand exploration and development.

1964 when the No. 1 J. F. Long well in Centre Co. (No. 15, Figure 10, and Table 12) reached a total depth of 15,662 ft. in the Black River (Middle Ordovician).

Figure 8 shows the annual rate of deep-sand exploration and development. While Figure 9 shows the stratigraphy of the Minard Run Oil Company No. 1 well drilled in Bradford Township, McKean County in 1962. The locations of all the deep wells drilled in Pennsylvania during 1964 are indicated on Figure 10.

At the end of 1964 a total of 2,558 deep wells had been drilled in the Commonwealth. Of the 2,558 deep wells drilled to date, 1,472 were gas wells, 6 were oil and gas wells, 990 were dry holes, 87 were drilled for gas storage, and 3 were to be used for the disposal of waste.

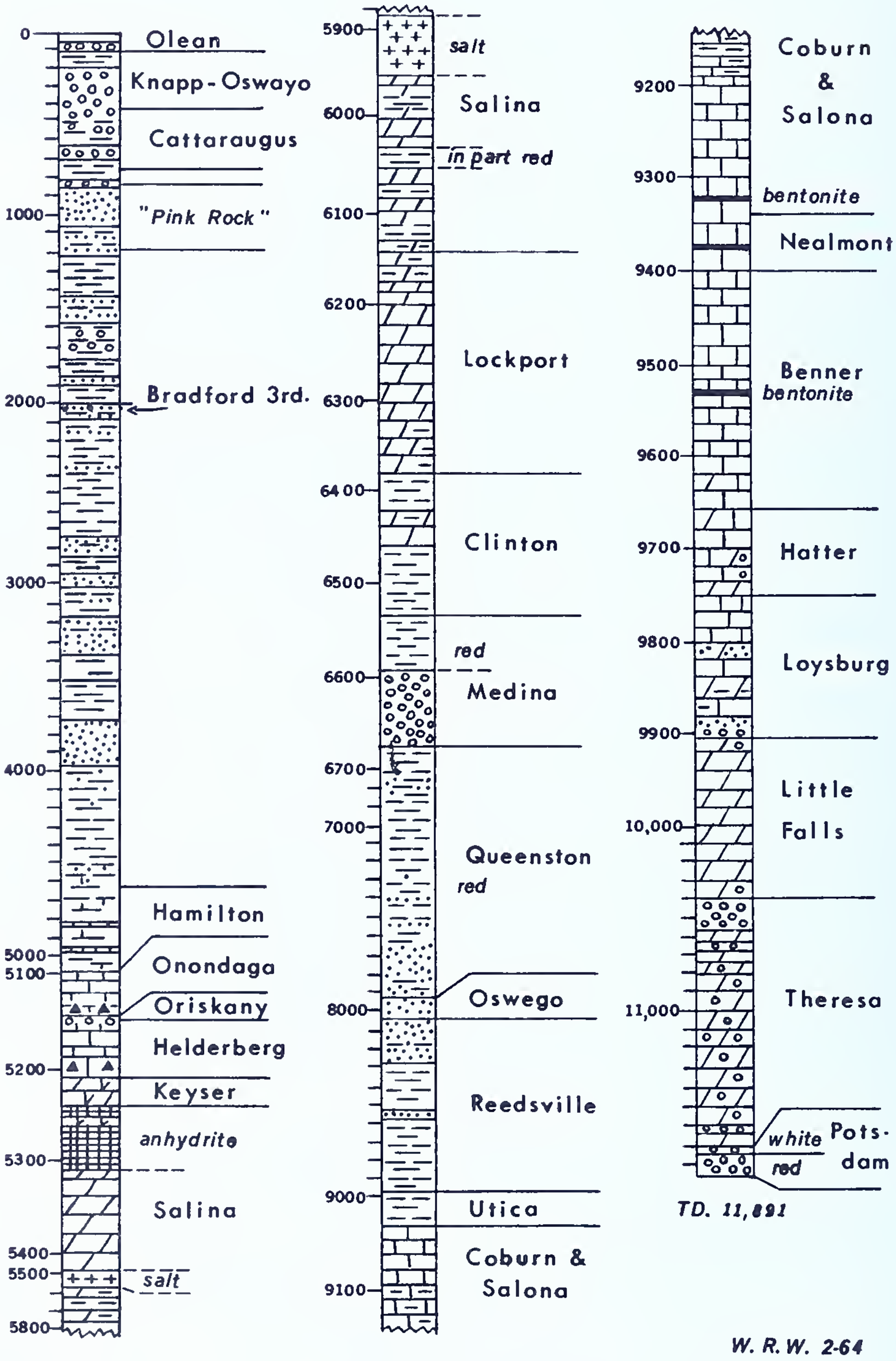
During the year 142 wells were drilled to the Oriskany Formation or deeper, of which 79 were Medina gas wells, 16 were Oriskany gas wells, 2 produced gas from the Gatesburg, 32 had shows of gas or were dry holes, 12 were drilled for gas storage, and 1 was drilled for waste disposal. Three dry holes did not reach the Onondaga. Of the 145 deep wells completed during the year, 99 wells were fractured and 95 of these wells were completed as commercial gas wells.

The deep well footage amounted to 702,754 ft. Rotary tools completed 126 deep wells during the year, mostly with air rotary, and 19 were completed with cable tools.

The Kastle Pool in Crawford County had 37 wells drilled within its limits during the year. The Bushnell-Lexington Pool in Erie County had 27 new wells drilled in 1964. While the Indian Spring Pool in Crawford County was next with 16 new wells. The deep well completions for Pennsylvania during the year are summarized in Table 8. Table 11 shows the 1964 gas production from the Commonwealth's deep gas reservoirs.

Table 8.—*Summary of deep-well completions in Pennsylvania, 1964*

| | *Development* | | *Wildcat* | | *Storage* | *Disposal* | *Total* |
|---|---|---|---|---|---|---|---|
| Gas | 91 | | 6 | | 12 | | 109 |
| Dry | | 13 | | 22 | | 1 | 36 |
| Footage | 395,675 | 67,586 | 31,605 | 145,674 | 56,242 | 5,972 | 702,754 |



MINARD RUN OIL COMPANY No. 1

Bradford Twp., McKean Co., Pa.

Figure 9. Stratigraphy of Minard Run Oil Co. no. 1 well.

## DEVELOPMENT IN THE DEEP GAS FIELDS

Table 9 lists the important discoveries of 1964 while Table 10 lists the important dry exploratory tests.

Bedford County with 10 completions had 2 discoveries. The T. Blair Elbin No. 1 (No. 8, Figure 10, Table 12) by New York State Natural Gas Corp. was drilled in Mann Township in the highly folded Ridge and Valley Province discovering the Big Mountain Field. Gas was found in the Oriskany sand from 5450 ft. to 5574 ft. After fracturing, the 91-hour rock pressure was 1871 psi (pounds per square inch) with an open flow of 5082 MCFGPD. The second discovery was made by the L. LaMaster No. 1 (No. 9, Figure 10, Table 12) in the same area by the same company discovering the Pennland Pool. Oriskany gas was found at 4774 ft. and 4804-4834 ft. The 4-day rock pressure after fracturing was 1400 psi with an open flow of 4050 MCFGPD. At the year's end 2 additional gas wells had been completed in the Big Mountain Field. The Five Forks Field had two completions, a gas well and a dry hole. The Purcell Field had 1 gas well and 3 dry holes drilled within its boundaries.

Cameron County with 2 wildcats did not have any new production. Felmont Oil Corp. drilled Emporium Country Club No. 1 (No. 11, Figure 10, Table 12) in Lumber Township as an outpost to the Hicks Run Field on the Marshlands Anticline. The Oriskany was found at 5920 ft. with a small amount of saltwater and no gas. The well was plugged and abandoned without fracturing. The other unsuccessful wildcat was drilled as a new field wildcat by New York State Natural Gas Corporation when they drilled their Pa. Tract 105 No. 1 well (No. 12, Figure 10, Table 12) in Shippen Township on the southeast flank of the Sabinsville anticline. A show of gas was noticed in the Onondaga chert at 6533 ft. but this well was also plugged and abandoned without fracturing.

In Carbon County Phillips Petroleum Co. drilled No. 1 Graver Estate (No. 13, Figure 10, Table 12) in Towamensing Township. This new field wildcat was drilled to a total depth of 5385 ft. testing the Tonolaway (Upper Silurian). All formations were dry, including the Oriskany at 4948 ft. and the well was plugged and abandoned.

A Centre County well became the deepest well in Pennsylvania during the year. The J. Franklin Long No. 1 (No. 15, Figure 10, Table 12) by Socony Mobil Oil Co. was drilled in Marion Township on the Nittany Arch. The well reached a total depth of 15,662 ft. after drilling for 8½ months. During this period two thrust faults were penetrated, one at

### Table 9.—*Important discoveries in 1964, Pennsylvania*

| *Map No.* | *County & Location* | *Operator, Well No. & Lease* | *Comp. Date M-D* | *Basis for Loc.* | *Total Depth (Feet)* | *Deepest Formation Reached* | *Prod. Depth (Feet)* | *Producing Formation or Zone* | *Init. Prod. MCF* | *Field or Pool Name* | *Explor. Class* | *Remarks* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Bedford Co.* | | | | | | | | | | | |
| 1 | Mann Twp. ........ | NYSN Gas Corp., #1 T. B. Elbin | 10/6 | Sur. & Sub. Geol., Seis. | 5,574 | Helderberg | 5.550 | Oriskany | 5.082 | Big Mountain | NFD | Highly faulted area |
| 2 | Mann Twp. ........ | NYSN Gas Corp., #1 L. LaMasters | 8/28 | Sub. Geol., Seis. | 4.934 | Helderberg | 4.870 | Oriskany | 4.050 | Pennland | NPD | Highly faulted area |
| | *Crawford Co.* | | | | | | | | | | | |
| 11 | Spring Twp. ....... | Transamerican, #1 J. Scull | 2/19 | Sub. Geol., Seis. | 6.398 | Gatesburg | ? | Gatesburg | 2.400 | Scull | DPD | First Gatesburg Pool in State |
| 12 | Beaver Twp. ....... | Transamerican, #1 N. Voorhees | 5/13 | Sub. Geol., Seis. | 6.194 | Gatesburg | ? | Gatesburg | 1.853 | Beaver Center | DPD | Second Gatesburg discovery in State |
| | *Fayette Co.* | | | | | | | | | | | |
| 17 | South Union Twp. ... | W. E. Snee et al., #1 L. F. Heyn | 8/16 | Sub. Geol. | 11,571 | Tuscarora | 11.510 | Tuscarora | 2.000 | Heyn | DPD | On Chestnut Ridge Ant. |
| | *Somerset Co.* | | | | | | | | | | | |
| 24 | Bro. Valley Twp. ... | Shell Oil Co., #1 R. D. Shumaker | 3/16 | Sub. Geol., Seis. | 9,105 | Helderberg | 8.845 | Oriskany | 2.400 | Somerset | NFD | On Negro Mountain Ant. |

Table 10.—*Important dry exploratory tests in Pennsylvania, 1964*

| *Map No.* | *County & Location* | *Operator, Well No. & Lease* | *Comp. Date M-D* | *Basis for Loc.* | *Total Depth (Feet)* | *Deepest Formation Reached* | *Explor. Class or Field* | *Remarks* |
|---|---|---|---|---|---|---|---|---|
| | *Carbon Co.* | | | | | | | |
| 5 | Towomensing Twp. . | Phillips Pet. Co., #1 Graver Est. | 9/3 | Seis. | 5,396 | Wills Creek | NFW | Oriskany present but dry |
| | *Centre Co.* | | | | | | | |
| 6 | Union Twp. ....... | NYSN Gas Corp., #1 Lehigh Valley | 7/17 | Sur. Geol., Seis. | 8,200 | Helderberg | NFW | Oriskany present but dry |
| 7 | Marion Twp. ...... | Mobile Oil Co., #1 J. F. Long | 7/23 | Sur. Geol., Seis. | 15,662 | Black River | NFW | Middle Ordovician test on Nittany Arch |
| | *Crawford Co.* | | | | | | | |
| 10 | Beaver Twp. ...... | Transamerican, #1 R. C. Clark | 2/13 | Sub. Geol. | 6,435 | Gatesburg | NFW | Gatesburg play in NW Pa. |
| 15 | Bloomfield Twp. ... | D. C. Garrett, #1 W. Morton | 7/12 | Sub. Geol. | 7,437 | Gatesburg | NFW | Gatesburg play in NW Pa. |
| | *Erie Co.* | | | | | | | |
| 16 | City of Erie ........ | Hammermill Co., #2 Hammermill | 8/29 | Sub. Geol. | 5,972 | Basement | Waste Disposal | Second basement well in W Pa. |
| | *Juniata Co.* | | | | | | | |
| 20 | Fayette Twp. ...... | Shell Oil Co., #1 Shade Mt. Unit | 10/17 | Sur. Geol., Seis. | 10,036 | Gatesburg | NFW | On Shade Mountain Ant. |
| | *Lackawanna Co.* | | | | | | | |
| 21 | Greenfield Twp. ... | Humble Oil Co., #1 J. Lally | 12/18 | Sur. & Sub. Geol., Seis. | 5,408 | Trimmers Rock | NFW | On White Deer Ant. |
| | *Lawrence Co.* | | | | | | | |
| 22 | Scott Twp. ........ | Peoples Nat. Gas Co., #1 G. H. Hohman | 7/10 | Seis. | 4,920 | Helderberg | NFW | |
| | *Warren Co.* | | | | | | | |
| 25 | Farmington Twp. . | Transamerican, #1 Marsh-Childs | 6/15 | Sub. Geol. | 8,130 | Gatesburg | NFW | Gatesburg play in NW Pa. |
| | *Westmoreland Co.* | | | | | | | |
| 27 | Hempfield Twp. . . | Peoples Nat. Gas Co., #1 Hempfield | 2/7 | Sub. Geol., Seis. | 8,356 | Marcellus | NFW | Comp. as shallow gas well |

926 ft. and the other at 8650 ft. Considerable time was spent cementing off 300 ft. of drill collars and drilling past them. The well started in the Gatesburg (Upper Cambrian) and ended up in the Black River (Middle Ordovician). Saltwater was encountered at 12,510 ft. and the well was plugged and abandoned at total depth. A second unsuccessful new field wildcat in Centre County was the Lehigh Valley Coal No. 1 (No. 14, Figure 10, Table 12) by New York State Natural Gas Corporation an Oriskany test in Union Township just west of the Allegheny Front. The Oriskany was found dry at 8102 ft. and the well was plugged and abandoned.

Clarion County had 3 development wells drilled in the Mays Pool. The only successful one of the three was the J.A. Mays No. 2 (No. 17, Figure 10, Table 12) by Fairman Drilling Company in Monroe Township. The Oriskany was found at 5682 ft. and after fracturing produced 1750 MCFGPD at a 113-hr. rock pressure of 2745 psi. The only other producer in the field is the discovery well.

Clearfield County with 3 development wells also had a new field wildcat. Fairman Drilling Co. drilled the new field wildcat on the Mary Bailey (No. 19, Figure 10, Table 12) in Pike Township on the east flank of the Chestnut Ridge anticline. This Oriskany was poorly developed at 7532 ft. and the well was plugged and abandoned at a total depth of 7590 ft. One of the development wells was a dry hole in the Sabula Pool and the other 2 were Onondaga chert-Oriskany gas wells in the Rockton Pool. Both wells were drilled by Lee E. Minter.

More deep wells were drilled in Crawford County during the year than in any other county. This county had 62 completions consisting of 2 successful deeper pool tests, 1 unsuccessful deeper pool test, 3 unsuccessful new field wildcats, and 56 development wells. The 2 successful deeper pool tests were Gatesburg discoveries. Both discoveries were made by Transamerican Petroleum Corporation, one in Spring Township by the Joseph Scull No. 1 and the other in Beaver Township by drilling deeper an old well, the N. Voorhees No. 1. The J. Scull No. 1 (No. 45, Figure 10, Table 12) found the Gatesburg at 6300 ft. and was completed at a total depth of 6398 ft. after acidizing. The initial open flow was 2,590 MCFGPD at a 40-hr. rock pressure of 2150 psi. The well discovered the Scull Pool. The N. Voorhees No. 1 (No. 56, Plate 9, Table 12) found gas in the Gatesburg from 6004-6007 ft. discovering the Beaver Center Pool. After acidizing the initial production amounted to 1640 MCFGPD and some oil at a rock pressure of 2200 psi. By the end of the year 4 more wells had been drilled trying to extend the limits of the Scull Pool. So far the Scull and Beaver Center Pools are one well pools. Transamerican Petroleum Corporation drilled their Robert Clark No. 1 (No. 32, Figure 10, Table 12) in Beaver Township to the Gatesburg where saltwater was encountered at 6111 ft. The well was plugged back to the Medina producing 811 MCFGPD from this sand at a 7-day rock pressure of 1055 psi. D. C. Garrett drilled 3 unsuccessful new field wildcats. One was Homer Barber No. 1 (No. 82, Figure 10, Table 12) in Bloomfield Township, a Medina test abandoned at a total depth of 4760 ft. The other two were Joseph Morzka No. 1 (No. 83, Figure 10, Table 12) in Rockdale Township and Walter Morton No. 1 (No. 84, Figure 10, Table 12) in Bloomfield Township; both were Gatesburg tests and both found saltwater in the Gatesburg. The Kastle Pool had 37 wells drilled within its limits during the year. This makes a total of 48 potential gas wells and 6 dry holes. At the year's end this 2 yr. old pool still had no transportation line and all wells were shut in. A line is being laid into the area and a gathering system is being installed so that gas should be moving out to the consumer by the early spring of 1965. A successful outpost of the Kastle Pool was the Mary Burns No. 1 (No. 31, Figure 10, Table 12) by Ventura Oil Co. The well was drilled in Cussewago Township finding gas in the Medina at 3737 ft. which extended the Kastle Pool to the northwest. After fracturing the well produced 800 MCFGPD at a 12-hr. rock pressure of 1170 psi. The Indian Spring Pool had 16 completions within its boundaries, 14 were gas wells and 2 were dry holes, making a total of 51 producing gas wells and 10 dry holes. Three of the 14 gas wells were Scull Pool development wells which were dry in the Gatesburg and plugged back to the Medina as gas producers. The Pennside Pool had 3 gas producers and one dry hole drilled within its boundaries.

Erie County had the second highest number of completions with a total of 30 wells completed, a basement test to be used for waste disposal, and 29 development wells. The Hammermill Paper Co. drilled Hammermill No. 2 (No. 85, Figure 10, Table 12) in the City of Erie to basement. Only one other well, the Kardosh No. 1 by M. L. Benedum and Arkansas-Louisiana Gas Co. in Crawford County, was drilled to basement in western Pennsylvania. Hammermill No. 2 was drilled in an attempt to find horizons for the disposal of waste liquids. The well was drilled 20 ft. into basement to a total depth of 5972 ft. The Oriskany was found at 1658 ft. and the Gatesburg at 5105 ft. No shows of oil or gas were found. The Gatesburg was tight but a couple of porous zones were found in the Silurian section which could be used for the disposal of liquid waste. A black Precambrian schist was found at 5952 ft. The Bushnell-Lexington Pool at the end of 1964 contained 60 producing gas wells and 8 dry holes, 27 of these were drilled in 1964. Of the 27 wells,

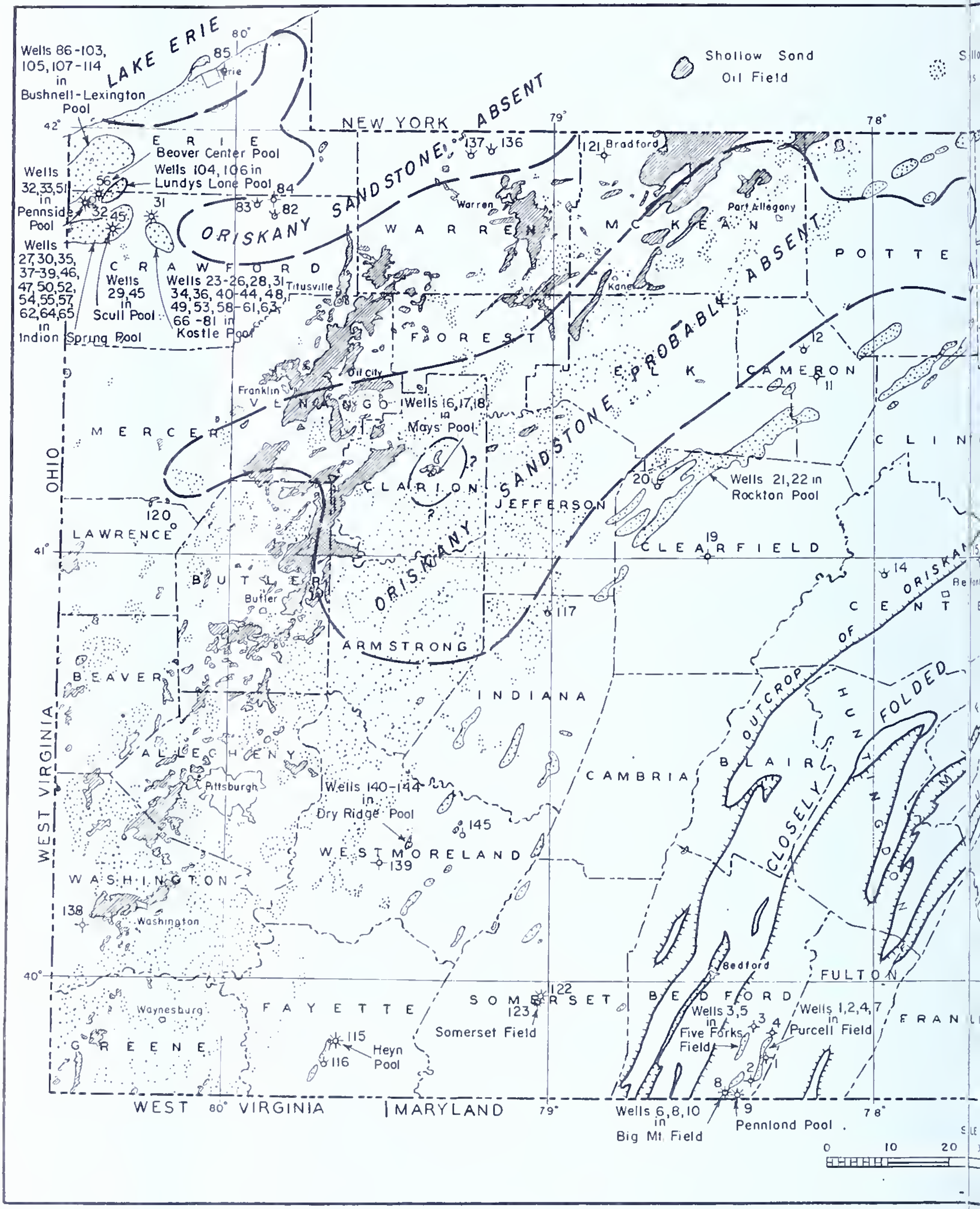
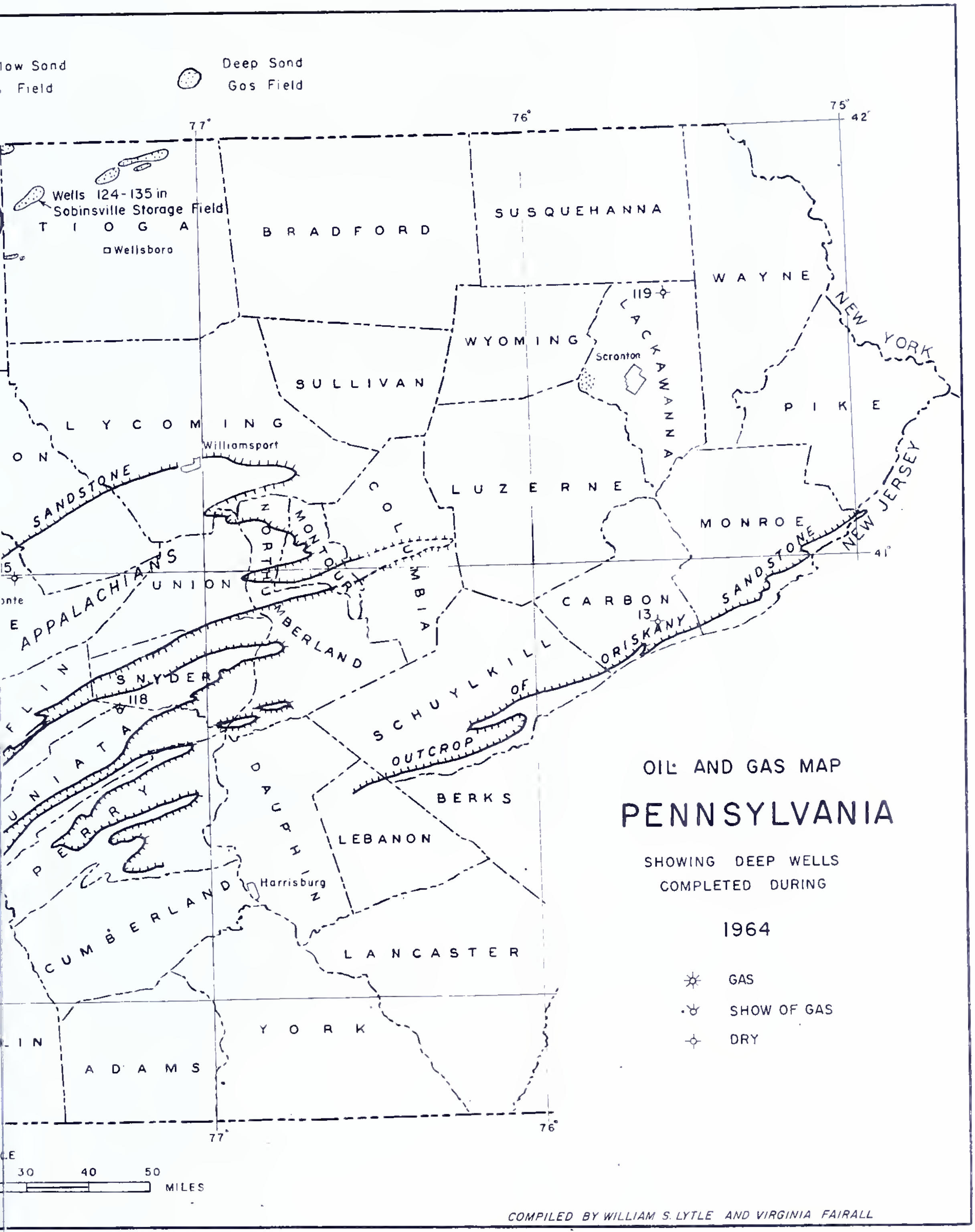


Figure 10. Deep w



e drilled during 1964.

25 were gas wells and 2 were dry holes. Ventura Oil Co. and James Drilling Co. both reported wells completed in this field with initial open flows of 10,000 MCFGPD. The largest open flow reported was by Worldwide Petroleum Corporation when they drilled L. J. Copeland No. 1 (No. 93, Table 12) in Conneaut Township. A show of gas was found in the Medina at 3290 ft. After fracturing the initial production was 12,000 MCFGPD at a 7-day rock pressure of 945 psi. The Lundys Lane Pool had 2 completions, a Medina Gas well and a dry hole.

Fayette County with its new discovery established a new producing depth record. The Leo F. Heyn No. 1 (No. 115, Figure 10, Table 12) was drilled in South Union Township on the Chestnut Ridge anticline in 1937 discovering the Chert-Oriskany Summit Gas Field and reaching a total depth of 8450 ft. William E. Snee et al drilled this well deeper in 1964 finding the Tuscarora (Medina-Lower Silurian) at 11,318 ft. reaching total depth at 11,566 ft. still in the Tuscarora. The deepest show of gas was at 11,510 ft. After being acidized and fractured in the Tuscarora the well produced 1,900 MCFGPD at a 96-hr. rock pressure of 4457 psi. This is the first production from the Tuscarora in the area and a new producing depth record for Pennsylvania. After producing some 40,000 MCFG in three months (see Table 11) the well was abandoned due to mechanical difficulties. This well discovered the Heyn Pool. The bottom hole temperature of this well (T. D. 11,566) was 196 degrees Fahrenheit compared with the bottom hole temperature of the J. Franklin Long No. 1 in Centre County of 158 degrees Fahrenheit at a T. D. of 15,662 ft. The only other well drilled in Fayette County during the year was the Pa. Tract 1 No. 1 (No. 116, Figure 10, Table 12) by William Snee et al in Wharton Township, a stepout from the South Summit Oriskany Pool. The well found gas and saltwater in the Oriskany and it was plugged and abandoned.

An unsuccessful deeper pool test was drilled in Indiana County when New York State Natural Gas Corporation drilled the No. 1 Albert Miller (No. 117, Figure 10, Table 12) on the McKee Run anticline in North Mahoning Township. The Oriskany was found at 7621-7632 ft. Considerable gas and salt water was produced after fracturing and the well was plugged and abandoned.

Juniata County had a well drilled by Shell Oil Company in Fayette Township on the Shade Mountain anticline. The well, their Lost Creek Rod-Gun Club No. 1 (No. 118, Figure 10, Table 12) started in the Reedsville Formation (Upper Ordovician), cut a fault at 6290 ft. and was completed in the Conococheague at a total depth of 10,036 ft. and abandoned.

In Lackawanna County Humble Oil and Refining Company drilled the J. Lally No. 1 in Greenfield Township (No. 119, Figure 10, Table 12) to a total depth of 5408 in the Brallier shale. A slight show of gas was found from 3820-3847 ft. The well has been temporarily abandoned.

Lawrence County had an unsuccessful new field wildcat completed in Scott Township by Peoples Natural Gas Company on their G. H. Hohman lease (No. 120, Figure 10, Table 12). After finding the Oriskany dry at 4764 ft. the well was plugged and abandoned at a total depth of 4920 ft.

An unsuccessful new field wildcat was drilled in McKean County by Anchor Gas Co. on their Corydon Prospect (No. 121, Figure 10, Table 12) in Corydon Township. After finding salt water in the Oriskany at 4430 ft. the well was plugged and abandoned.

A discovery was made in Somerset County when Shell Oil Company drilled their R. D. Shumaker No. 1 (No. 123, Figure 10, Table 12) in Brothers Valley Township on the Negro Mountain anticline. Oriskany gas was found at 8800-8818 ft. and after fracturing the initial open flow was 2400 MCFGPD and 3 bbls. of salt water at an 11-hr. rock pressure of 3225 psi. Later on in the year their D. J. Beachly was drilled as a confirmation well.

Tioga County had 12 gas storage wells drilled in the Sabinsville storage field. All the wells were drilled by New York State Natural Gas Corporation.

Warren County had 2 completions, both of them unsuccessful new field wildcats. The Marsh-Childs No. 1 (No. 136, Figure 10, Table 12) by Transamerican Petroleum Corporation in Farmington Township was drilled to the Gatesburg. The Oriskany was found at 3740 ft. but was dry and the Gatesburg was found at 7835 ft. with a small show of gas at 7840 and both a show of gas and salt water from 8000 to 8040 ft. The well was plugged and abandoned. E. T. Matthews et al drilled the E. S. Hanson No. 1 (No. 137, Figure 10, Table 12) in Farmington Township. The Medina was found dry at 4945 ft. and the well was abandoned at a total depth of 5121 ft.

In Washington County J. C. Johnson drilled P. C. McDonald No. 2 (No. 138, Figure 10, Table 12) in Donegal Township. This was an old well drilled deeper to a total depth of 6371 ft. in the Hamilton and was plugged and abandoned.

Westmoreland County had 7 completions. Peoples Natural Gas Company drilled Hempfield No. 1 (No. 139, Figure 10, Table 12) in Hempfield Township. The well went through a fault just below the Tully and was plugged back to produce from Upper Devonian sands. The same company also drilled an unsuccessful new pool wildcat in the Lycippus Field. The Donald Smith No. 5 (No. 145, Figure 10, Table 12) was drilled in Derry Township on the Chestnut Ridge anticline. The initial production from the Oriskany was 8500 MCFGPD and salt water at an 18-hr. rock pressure of 3215 psi. The well blew down, was fractured and after fracturing it produced 1245 MCFGPD and ½ bbl. salt water per hour at a rock pressure in 67 hrs. of 2915 psi. The well was plugged and abandoned. The Dry Ridge Field had 5 development gas wells drilled within its borders.

## OUTLOOK FOR 1965

Four wildcats are of particular interest to the oil and gas operators. One is the Jessie Miller No. 1 (Shellsburg Unit No. 1) by Kerr McGee Oil Industries Inc. et al in Napier Township, Bedford County on the Shellsburg dome. It is scheduled as a 12,000 foot test. A well was drilled on this dome within a few hundred feet of the new location in 1952. It was the Jessie B. Miller No. 1 by Appalachian Basin Associates. The well bottomed in the Loysburg Formation (Lower Ordovician) at 8979 ft. Sour gas amounting to 600 MCFGPD was found at 8870 ft. in the Bellefonte Dolomite (Lower Ordovician). The 1952 well was plugged and abandoned.

Humble Oil and Refining Co. is drilling No. 1 Hudson Realty Co. well in Clinton Township, Wayne County. The projected depth is 10,000 ft. to test the Silurian carbonates.

Peoples Natural Gas Co. has made a location in Lake Township, Mercer County at their No. 1 Robert W. Temple. The projected depth is 9,500 ft. to test the Ordovician and Upper Cambrian.

New York State Natural Gas Corp. et al has just announced a test in the Leidy storage field in Clinton County. The well will test the rocks down to the Cambrian.

See the shallow-sand section of this report for the outlook on Upper Devonian or younger producing horizons.

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Table 11.—*Deep gas production in Pennsylvania, 1964*

* Shallow Gas Production of Field Not Shown.
** Corrected Figures.

| County | Field | Pool | Discovery Date | Production in Mcf: Cumulative Production at End of 1963 | Production in Mcf: Production 1964 | Production in Mcf: Cumulative Production at End of 1964 | Status of Field or Pool at End of 1964 |
|---|---|---|---|---|---|---|---|
| Armstrong ...... | Shellhammer* | Rupert | 11/14/58 | 314,097 | 16,899 | 330,996 | Producing |
| Bedford ........ | Artemas | TOTAL: | 7/30/63 | 1,100,000 | 473,000 | 1,573,000 | Producing |
| | | Pennland | 8/28/64 | Turned into line in 1964 | | | Producing |
| | Big Mt. | | 10/6/64 | Turned into line in 1964 | | | Producing |
| | Five Forks | | 6/21/62 | 7,700,000 | 4,000,000 | 11,700,000 | Producing |
| | Purcell | | 12/14/57 | 2,200,000 | 400,000 | 2,600,000 | Producing |
| Bedford & Blair ......... | Pavia | | 11/20/61 | | | | Shut In |
| Cameron & Elk ........... | Whippoorwill | | 7/10/61 | 8,700,000 | 1,600,000 | 10,300,000 | Producing |
| Cameron, Elk, Jefferson, Clearfield & Indiana ...... | Punxsutawney-Driftwood | TOTAL: | 9/15/51 | 432,150,000 | 9,100,000 | 441,250,000 | Producing |
| | | Benezette | 1/5/53 | 231,300,000 | 2,200,000 | 233,500,000 | Producing |
| | | Driftwood | 9/15/51 | | | | |
| | | Boone Mt. | 9/18/58 | 87,700,000 | 3,400,000 | 91,100,000 | Producing |
| | | DuBois | 1/6/60 | | | | Producing |
| | | Sabula | 8/26/63 | 50,000 | 300,000 | 350,000 | Producing |
| | | Helvetia | 5/11/60 | 109,900,000 | 3,000,000 | 112,900,000 | Producing |
| | | Reed-Deemer | 5/9/55<br>12/1/53 | | | | Producing |
| | | Rockton | 2/25/55 | | | | Producing |
| | | Sykesville | 11/10/60 | | | | Producing |
| | | Hicks Run | 6/7/56 | 3,200,000 | 200,000 | 3,400,000 | Producing |
| Clarion ........ | Clarion* | Mays | 10/30/63 | | 6,218 | 6,218 | Producing |
| Clinton & Potter ........ | Leidy | TOTAL: | 1/9/50 | 158,814,832 | 326,289 | 159,141,121 | Gas Storage & Producing |
| | | Ole Bull | 1/9/59 | 4,014,800 | 326,289 | 4,341,089 | Producing |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Crawford & Erie .......... | Conneaut | TOTAL: | 2/11/57 | 3,215,012 | 2,443,707 | 5,658,719 | Producing |
| | | Beaver Creek | 6/10/64 | Turned into line in 1964 | | | Producing |
| | | Bushnell-Lexington | 12/31/58 | 935,516 | 1,246,406 | 2,181,922 | Producing |
| | | Indian Spring | 9/11/57 | 2,038,526 | 1,109,332 | 3,147,858 | Producing |
| | | Kastle | 7/14/62 | To be turned into line in 1965 | | | |
| | | Lundys Lane | 11/9/61 | 240,970 | 87,969 | 328,939 | Producing |
| | | Scull | 2/19/64 | Turned into line in 1964 | | | Producing |
| Erie ............ | Burgess | | 10/17/60 | 77,105 | 14,383 | 91,488 | Producing |
| | Corry | TOTAL: | 4/29/47 | 978,111 | 11,275 | 989,386 | Gas Storage & Producing |
| | | Beaver Dam | 5/20/53 | 124,411 | 11,275 | 135,686 | Producing |
| | Meade | | 8/23/46 | 4,890,409 | 4,813 | 4,895,222 | Oriskany Gas Storage (1 producing Medina well) |
| | Phillipsville | | 7/17/56 | 5,000 | | 5,000 | Shut In |
| Fayette ......... | Fike | | 8/8/63 | 15,711 | 71,333 | 87,044 | Producing |
| | Ohiopyle | | 12/28/59 | 2,189,019 | 379,244 | 2,568,263 | Producing |
| | Spruell | | 10/13/61 | | | | Shut In |
| | Summit | TOTAL: | 3/24/38 | 40,000,894 | 429,602 | 40,430,496 | Producing & Abandoned |
| | | East Summit | 12/31/60 | 27,150 | | 27,150 | Shut In |
| | | Heyn | 2/4/64 | | 40,659 | 40,659 | Abandoned |
| | | North Summit | 3/24/38 | 20,251,130 | 110,343 | 20,361,473 | Producing |
| | | South Summit | 5/9/42 | 19,722,614 | 278,600 | 20,001,214 | Producing |
| Indiana ........ | Cherry Hill* | Crichton | 1/9/63 | 1,056,248 | 451,135 | 1,507,383 | Producing |
| | | Hadden | 7/11/63 | | | | |
| | Jacksonville | | 9/21/56 | 16,974,207** | 566,242 | 17,540,449 | Producing |
| | Nolo | | 9/30/56 | 6,000,000 | 200,000 | 6,200,000 | Producing |
| Potter .......... | Ellisburg | TOTAL: | 9/1/33 | 79,600,000 | | 79,600,000 | Storage |
| | | Bingham Center | 1/2/39 | 79,600,000 | | 79,600,000 | Storage |
| | | Ellisburg | 9/1/33 | | | | Storage |
| | | West Bingham | 7/16/36 | | | | Storage |
| | Ulysses | | 10/2/39 | 2,001,694 | 335,015 | 2,336,709 | Producing |
| | | New Field | 4/2/62 | | | | |

Table 11.–*Deep gas production in Pennsylvania, 1964, Continued*

| *County* | *Field* | *Pool* | *Discovery Date* | *Production in Mcf* Cumulative Production at End of 1963 | *Production in Mcf* Production 1964 | *Production in Mcf* Cumulative Production at End of 1964 | *Status of Field or Pool at End of 1964* |
|---|---|---|---|---|---|---|---|
| Somerset ........ | Boswell | TOTAL: | 11/11/58 | 6,407,894 | 855,414 | 7,263,308 | Producing |
| | | Boswell | 11/11/58 | 5,921,892 | 765,678 | 6,687,570 | Producing |
| | | Snyder | 6/16/60 | 486,002 | 89,736 | 575,738 | Producing |
| | Mt. Zion | | 8/21/63 | | | | Abandoned |
| | Somerset | | 3/9/64 | To be turned into line in 1965 | | | |
| Warren ......... | Camp Run | | 5/12/61 | 13,000 | 2,990 | 15,990 | Producing |
| Washington ..... | Daniels Run* | Glyde | 9/6/61 | 26,093 | 9,255 | 35,348 | Producing |
| Westmoreland ... | Blairsville* | Kahl | 10/23/62 | 4,785,766 | 2,417,339 | 7,203,105 | Producing |
| | Latrobe* | Dry Ridge | 8/25/46 | 603,877 | 1,322,134 | 1,926,011 | Producing |
| | Jacobs Creek* | Bailey | 12/26/61 | 187,428 | 109,546 | 296,974 | Producing |
| | Lycippus | TOTAL: | 8/17/49 | 4,925,156** | 231,988 | 5,157,144 | Producing |
| | | Derry | 12/5/58 | 81,113 | 4,722 | 85,835 | Producing |
| | | Piper | 8/17/49 | 648,245 | 5,348 | 653,593 | Producing |
| | | St. Boniface<br>Chapel<br>Hribal | 9/13/56<br><br>8/17/62 | 4,186,095 | 194,560 | 4,380,655 | Producing<br><br>Abandoned |
| | Murrysville* | Sloan | 10/22/63 | 9,703** | 27,358 | 37,061 | Producing |
| Westmoreland & Somerset ... | Johnstown | TOTAL: | 5/16/57 | 13,098,071 | 1,784,370 | 14,882,441 | Producing |
| | | Baldwin<br>Beck | 5/22/60<br>5/16/57 | 4,490,543 | 626,512 | 5,117,055 | Producing<br>Producing |
| | | Williams | 2/14/58 | 8,607,528 | 1,157,858 | 9,765,386 | Producing |
| | Seven Springs | TOTAL: | 12/15/58 | 4,116,582 | 439,776 | 4,556,358 | Producing |
| | | Blair | 12/5/58 | 3,496,857 | 375,732 | 3,872,589 | Producing |
| | | Clarke | 3/15/61 | 325,628 | 31,935 | 357,563 | Producing |
| | | Kooser | 5/19/59 | 294,097 | 32,109 | 326,206 | Producing |

## Table 12.—*Summarized records of deep wells drilled in Pennsylvania in 1964*

Sheet 1

| MAP NUMBER | 1 | 8 | 3 | 3 | 8 | 8 | 8 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY<br>Permit Number | BEDFORD<br>29-P | BEDFORD<br>27-P | BEDFORD<br>26-P | BEDFORD<br>30-P | BEDFORD<br>28 | BEDFORD<br>35 | BEDFORD<br>25 | BEDFORD<br>32 | BEDFORD<br>31 | BEDFORD<br>33 |
| NAME OF WELL | Percy S. Akers<br>2 | Ira Clingerman<br>1 | Ross E. Klahre<br>1 | Guy Mills<br>1 | R. C. Shipley<br>1 | Alden T. Smith<br>1 | Dora Vance<br>1 | T. Blair Elbin<br>1 | L. La Master<br>1 | Rufus E. Miles<br>1 |
| OPERATOR | NYSNG Corp.<br>N-940 | NYSNG Corp.<br>N-923 | NYSNG Corp.<br>N-928 | NYSNG Corp.<br>N-942 | NYSNG Corp.<br>N-929 | Felmont Oil Corp.<br>F-173 | NYSNG Corp.<br>N-922 | NYSNG Corp.<br>N-949 | NYSNG Corp.<br>N-944 | NYSNG Corp.<br>N-958 |
| TOWNSHIP | Monroe | Mann | Monroe | Monroe | Mann | Mann | Monroe | Mann | Mann | Mann |
| QUADRANGLE | Clearville<br>28 | Clearville<br>27 | Clearville<br>24 | Clearville<br>29 | Clearville<br>25 | Clearville<br>30 | Clearville<br>26 | Paw Paw<br>2 | Paw Paw<br>1 | Paw Paw<br>3 |
| LATITUDE | 2100 ft. S<br>39° 50' | 6350 ft. N<br>39° 45' | 11,000 ft. S<br>39° 55' | 17,800 ft. S<br>39° 55' | 8200 ft. S<br>39° 50' | 2400 ft. N<br>39° 45' | 8800 ft. S<br>39° 50' | 450 ft. S<br>39° 45' | 9350 ft. S<br>39° 45' | 3100 ft. S<br>39° 45' |
| LONGITUDE | 2250 ft. W<br>78° 20' | 8500 ft. E<br>78° 25' | 11,350 ft. W<br>78° 20' | 2000 ft. E<br>78° 20' | 2050 ft. W<br>78° 25' | 7400 ft. W<br>78° 25' | 8350 ft. W<br>78° 20' | 8750 ft. W<br>78° 25' | 8700 ft. W<br>78° 25' | 9800 ft. W<br>78° 25' |
| DATE COMPLETED | 6-19-64 | 5-16-64 | 4-7-64 | 6-26-64 | 5-2-64 | 12-4-64 | 4-29-64 | 10-5-64 | 8-27-64 | 11-27-64 |
| ELEVATION | 1208KB | 915DF | 1476KB | 1032DF | 1424KB | 1112G | 978KB | 1069RT | 1011DF | 1088G |
| CLEARVILLE | 3815-3855 | 3813-3835 | 1) 4025-4073<br>2) 4310-4337<br>Fault @ 4275± | 2892-2940 | 3907-3942 | 3726-3756 | 2596-2640 | 3753-3789 | 2614-2644 | 3318-3367? |
| Oolitic | 4032-4037 | 3965-3970 | 1) 4182-4188<br>2) 4459-4465 | 3010-3015 | 1) 4154-4159<br>Fault at 4200±<br>2) 4254-4260 | 1) 3939-3944<br>Fault at 4000±<br>2) 4045-4049 | 1) 2846-2849<br>Fault at 2870±?<br>2) 2876?-2880? | 3945-3949 | 2791-2795 | 3580-3584 |
| PURCELL | 5625-5689 | Fault at 5090<br>5185-5250 | 1) 5855-5903<br>Fault @ 5960±<br>2) 6015-6072 | 4782-4835 | 5354-5405 | 5088-5145 | 4275-4353 | 5100-5149 | 4335-4398 | 4927-4998 |
| ONONDAGA | 5963- | Fault at 5420±<br>5500-5662 | 6352- | 4976- | 5543- | 5286- | 4519- | 5269- | 4518- | 5170- |
| ORISKANY | 6073- | 5662- | 6516- | 5059-<br>SW @ 5150 | 5645-<br>Gas at 5687-5745 | 5394-<br>Gas at 5460-5503 | 4666-<br>Gas at 4751-4895 | 5374-<br>Gas 5450-5574 | 4634-<br>Gas 4774,4804-34 | 5292- |
| SHRIVER | 6240?- | 5829?- | 6706?- |  | 5840?- |  | 4870?- | 5540?- | 4850?- | 5460?- |
| HELDERBERG |  | 5923?- |  |  |  |  |  |  |  |  |
| KEYSER |  |  |  |  |  |  |  |  |  |  |
| TONOLOWAY WILLS CREEK |  |  |  |  |  |  |  |  |  |  |
| CLINTON |  |  |  |  |  |  |  |  |  |  |
| TUSCARORA |  |  |  |  |  |  |  |  |  |  |
| TOTAL DEPTH | 6265 | 6010 | 6745 | 5185 | 5895 | 5503 | 4895 | 5574 | 4931 | 5526 |
| DEEPEST FORMATION REACHED | Shriver | Helderberg | Shriver? | Oriskany | Shriver? | Oriskany | Shriver? | Shriver? | Shriver? | Shriver? |
| RESULT | 30 ft. SW @ 6111<br>Abandoned | SW @ 5102, 5830,5960<br>Abandoned | Abandoned | Abanoned | 6500 Mcf A.F.<br>RP 740psi<br>72 hrs. | 12,000 Mcf gas<br>Natural with SW<br>RP 1812 psi<br>30 hrs. | 389 Mcf gas<br>AF<br>RP 856 psi<br>9 days | 5082 Mcf gas<br>AF<br>RP 1871 psi<br>91 hrs.<br>Discovery Well<br>Big Mt. Field | 4050 Mcf gas<br>AF<br>RP 1400 psi<br>4 days<br>Discovery Well<br>Pennland Pool | 2214 Mcf gas<br>Natural<br>RP 1773 psi<br>40 hrs. |

DF Derrick Floor
G Ground
KB Kelly Bushing

RT Rotary Table
TC Top of Casing

ALL ELEVATIONS AND DEPTHS ARE IN FEET.

## Table 12.—*Summarized records of deep wells, Continued*

Sheat 2

| MAP NUMBER | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY<br>Permit Number | CAMERON<br>30 | CAMERON<br>29-P | CARBON<br>2 | CENTRE<br>2-P | CENTRE<br>1 | CLARION<br>185 | CLARION<br>189 | CLARION<br>194 | CLEARFIELO<br>382 | CLEARFIELD<br>379 |
| NAME OF WELL | Emporium Country Club<br>1 | Pa. Tract 105<br>1 | Graver Estate<br>1 | Lehigh Valley Coal<br>1 | J. Franklin Long<br>1 | W. & E. C. Culbartson<br>1 | J. A. Mays<br>2 | J. A. Mays<br>3 | Mary Balley<br>1 | H. Dodd<br>1 |
| DPERATDR | Falmont Oil Corp.<br>F-169 | NYSNG Corp.<br>N-937 | Phillips Petroleum Co. | NYSNG Corp.<br>N-943 | Socony Mobil Oil Co. | Falrman Orilling Co. | Felrman Orilling Co. | Falrman Orilling Co. | Falrman Orilling Co. | Felrman Orilling Co. |
| TOWNSHIP | Lumber | Shippan | Towamensing | Union | Marlon | Clarlon | Monroe | Monroe | Pike | Sandy |
| QUADRANGLE | Orlftwood<br>111 | Orlftwood<br>110 | Mauch Chunk<br>2 | Bellefonte<br>2 | Cantre Hell<br>1 | Clarlon<br>3 | Clarlon<br>4 | Clarlon<br>5 | Penfleld<br>280 | Penfleld<br>278 |
| LATITUDE | 6350 ft. N<br>41° 25' | 1000 ft. S<br>41° 30' | 8300 ft. N<br>40° 50' | 17,550 ft. S<br>41° 00' | 2150 ft. S<br>41° 00' | 14,300 ft. S<br>41° 15' | 10,300 ft. N<br>41° 10' | 9900 ft. N<br>41° 10' | 600 ft. N<br>41° 00' | 2000 ft. N<br>41° 10' |
| LDNGITUDE | 3750 ft. W<br>78° 10' | 2900 ft. E<br>78° 15' | 11,300 ft. W<br>75° 35' | 8200 ft. E<br>78° 00' | 4700 ft. W<br>77° 35' | 6800 ft. W<br>79° 20' | 3300 ft. E<br>79° 25' | 5400 ft. E<br>79° 25' | 6900 ft. W<br>78° 30' | 2600 ft. W<br>78° 40' |
| DATE COMPLETED | 9-9-64 | 6-5-64 | 9-3-64 | 7-17-64 | 7-23-64 | 2-17-64 | 3-14-64 | 4-7-64 | 6-21-64 | 1-8-64 |
| ELEVATION | 955RT | 1875DF | 574DF | 2246DF | 1227KB | 1432KB | 1431DF | 1496KB | 1558KB | 1769KB |
| TULLY | 5243-5333 | 5655-5735 | Hamilton<br>0-3268 | 7038-7090<br>SG 7115-55,7270 | Gatasburg 0-<br>Warrior 945- | 5366-5390? | 5292-5324 | 5396-5426? | 6682-6873 | 6908- |
| DNONDAGA LIMESTONE | 5902- | 6518-<br>6534-<br>SG @ 6533 | 3268-<br>Palmerton 4650-<br>Bowmanstown 4682? | 8070- | Fault et 1100<br>Lower Ord.<br>Carbonates-1100 | 5702 | 5622- | 5726- | 7470- | 7482- |
| CHERT | 5918?- |  |  |  |  |  |  |  | 7484- | 7499- |
| DRISKANY | 5920-<br>SSW | 6573-Horlzon<br>Shrlver 6573? | 4960-5170 | 8102- | Hines-8025?<br>Feult et 8650<br>McKanzie 8650- | 5766-<br>SW | 5682- | 5792-<br>SG | 7532- | 7554- |
| HELDERBERG | 5959?- | 6582?- | Lower Devonian &<br>Upper Silurian<br>5170- | 8146- | Rabbla Run Mem.<br>8650-8702 | 5785- | 5693?- | 5805- | 7538? | 7580?- |
| SALINA |  | Keyser 6620 |  |  | Keefer?-9096<br>Rose Hill-9190<br>Tuscarora-10,002 |  |  |  |  |  |
| GUELPH-LOCKPORT |  |  |  |  | Juniata-10,370?<br>Beld Eagla-11,575? |  |  |  |  |  |
| CLINTDN |  |  |  |  | Readsville-12,933<br>Antes-13,875<br>Coburn-14,560 |  |  |  |  |  |
| MEDINA |  |  |  |  | Salona-14,940<br>Naalmont-15,280<br>Benner-15,330 |  |  |  |  |  |
| QUEENSTON |  |  |  |  | Hatter-15,600 |  |  |  |  |  |
| TDTAL DEPTH | 5982 | 6665 | 5385 | 8200 | 15,662 | 5795 | 5700 | 5820 | 7595 | 7589 |
| DEEPEST FORMATIDN REACHED | Heldarbarg | Keyser | Upper Silurian | Helderberg | Hatter | Halderbarg | Heldarberg | Halderbarg | Halderbarg | Helderberg |
| RESULT | Not fractured<br>Abandoned | Not fractured<br>Abandoned | faulted and steeply dipping<br>Abandoned | Abandoned | SW et 12,510<br>Abendoned | 1-3/4 gal SW/mln. from Orlskany<br>Abandoned | 1750 Mcf gas<br>AF<br>RP2745 psl<br>113 hrs. | 35 Mcf gas and SW<br>Abandoned | Not frectured<br>Abandoned | 40 Mcf gas & SW<br>Abendoned |

# Table 12.—*Summarized records of deep wells, Continued*

Sheet 3

| MAP NUMBER | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY<br>Permit Number | CLEARFIELD<br>380 | CLEARFIELD<br>385 | CRAWFORD<br>104 | CRAWFORD<br>123 | CRAWFORD<br>169 | CRAWFORD<br>140 | CRAWFORD<br>162 | CRAWFORD<br>147-P | CRAWFORD<br>117 | CRAWFORD<br>181 |
| NAME OF WELL | Pa. Tract 123<br>1 | Pa. Tract 123<br>2 | C. & R. Crosley<br>1 | Arthur Ferguson<br>1 | J. Kapanick<br>2 | Gordon Artress<br>1 | Atrozkin<br>1 | David Bish<br>1 | Walter Brickner<br>1 | Burnham<br>1 |
| OPERATOR | Lee E. Minter | Lee E. Minter | Ventura Oil Co. | Ventura Oil Co. | James Drilling Co. | James Drilling Co. | Transamerican Petroleum Corp. | Ventura Oil Co. | Transamerican Petroleum Corp. | James Drilling Co. |
| TOWNSHIP | Huston | Huston | Cussewago | Cussewago | Cussewago | Hayfield | Spring | Beaver | Spring | Spring |
| QUADRANGLE | Penfield<br>279 | Penfield<br>281 | Cambridge Springs<br>16 | Cambridge Springs<br>17 | Cambridge Springs<br>18 | Girard<br>138 | Girard<br>132 | Girard<br>125 | Girard<br>121 | Girard<br>150 |
| LATITUDE | 14,850 ft. S<br>41° 15' | 16,800 ft. S<br>41° 15' | 3400 ft. N<br>41° 45' | 3300 ft. N<br>41° 45' | 1350 ft. N<br>41° 45' | 100 ft. N<br>41° 45' | 2400 ft. N<br>41° 45' | 5900 ft. N<br>41° 45' | 12,500 ft. N<br>41° 45' | 8300 ft. N<br>41° 45' |
| LONGITUDE | 4800 ft. W<br>78° 30' | 7000 ft. W<br>78° 30' | 4800 ft. E<br>80° 15' | 1300 ft. E<br>80° 15' | 1000 ft. E<br>80° 15' | 1400 ft. W<br>80° 15' | 6100 ft. E<br>80° 25' | 3950 ft. W<br>80° 25' | 2400 ft. E<br>78° 25' | 8500 ft. W<br>80° 20' |
| DATE COMPLETED | 1-26-64 | 8-9-64 | 2-5-64 | 5-11-64 | 11-18-64 | 8-1-64 | 6-30-64 | 6-6-64 | 3-24-64 | 10-9-64 |
| ELEVATION | 1574KB | 1618KB | 1118KB | 1115DF | 1132RT | 1237KB | 1046KB | 1143DF | 1023KB | 1037KB |
| TULLY | 6285- | 6365- | 2366-2420 | 2348-2401 |  | 2484-2536 | 2182?- | 2246- | 2050±- 2100± | 2163- |
| ONONDAGA | limestone 6902<br>chert 6918 | limestone 6998<br>chert 7008 | 2548- | 2530- | 2565- | 2662- | 2325- | 2404- | 2250±- | 2332- |
| ORISKANY | 6957-<br>700 Mcf | 7051-<br>50 Mcf at 7053 | 2752-2755?<br>SW at 2755 | 2726-<br>SW at 2728 | 2784-<br>SW at 2794 | 2861-2865±<br>SW at 2861 | 2540?-<br>SW | 2605-<br>SW at 2605 | 2437-<br>SW at 2437 | 2534-2544<br>SW |
| SALINA | Helderberg<br>6978- | Helderberg<br>7068- | 2822- | 2800- |  | 2942- |  |  |  | 2606- |
| GUELPH-LOCKPORT<br>Black Water |  |  | 3486- | 3463- | 3475?-<br>3650 | 3596-<br>3720 |  |  |  | 3254-<br>3350 |
| CLINTON<br>IRONDEQUOIT |  |  | 3728-<br>3804-3814 | 3708-<br>3782-3791 | 3730?-<br>3816-3824 | 3835-<br>3910-3920 | 3592- | 3642-3650 | 3486-3496 | 3494-<br>3562-3572 |
| MEDINA |  |  | 3846- | 3822-<br>SG at 3856 | 3833- | 3950- | 3630± ? |  | 3534?- | 3598- |
| QUEENSTON |  |  |  |  | 4040- | 4131- |  |  | 3698- | 3778- |
| MIDDLE ORDOVICIAN LIMESTONES |  |  |  |  |  |  |  |  | 5533- |  |
| GATESBURG |  |  |  |  |  |  |  |  | 6160?-<br>SG, SW 6170 |  |
| TOTAL DEPTH | 6983- | 7081 | 3980 | 3956 | 4046 | 4141 | 3782 | 3778 | 6318 | 3800 |
| DEEPEST FORMATION REACHED | Helderberg | Helderberg | Medina | Medina | Queenston | Queenston | Medina | Medina | Gatesburg | Queenston |
| RESULT | 1800 Mcf gas<br>AF<br>RP 1844 psi<br>8 days | 370 Mcf gas<br>AF<br>RP 1371 psi<br>5 days | 1470 Mcf gas<br>AF<br>RP 1175 psi<br>8 hrs. | 3000 Mcf gas<br>AF<br>RP 1125 psi<br>7 days | 3500 Mcf gas<br>AF<br>RP 1270 psi<br>24 hrs. | 5000 Mcf gas<br>AF<br>RP 1270 psi<br>48 hrs. | 1475 Mcf gas<br>AF<br>RP 1120 psi<br>30 hrs. | Abandoned | 500 Mcf gas<br>before acidizing<br>Abandoned<br>after acidizing<br>Gatesburg | 4000 Mcf gas<br>AF<br>RP 975 psi<br>24 hrs. |

Table 12.—*Summarized records of deep wells, Continued*

Sheet 4

| MAP NUMBER | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY<br>Permit Number | CRAWFORD<br>139 | CRAWFORD<br>90 | CRAWFORD<br>161 | CRAWFORD<br>126 | CRAWFORD<br>160 | CRAWFORD<br>156 | CRAWFORD<br>107 | CRAWFORD | CRAWFORD<br>164 | CRAWFORD<br>127 |
| NAME OF WELL | Mary Burns<br>1 | Robert Clark<br>1 | Robert Clark<br>2 | John Kapanick<br>1 | A. D. Lawrence<br>1 | C. Mehalko<br>1 | M. Miller<br>1 | Morgan<br>1 | Elmer Onderko<br>1 | Wm. Peterman<br>1 |
| OPERATOR | Ventura Oil Co. | Transamerican Petroleum Corp. | Transamerican Petroleum Corp. | James Drilling Co. | Flanigan Bros. | James Drilling Co. | James Drilling Co. | Ventura Oil Co. | Transamerican Petroleum Corp. | Transamerican Petroleum Corp. |
| TOWNSHIP | Cussewago | Beaver | Beaver | Hayfield | Spring | Cussewago | Spring | Conneaut | Conneaut | Cussewago |
| QUADRANGLE | Girard<br>134 | Girard<br>112 | Girard<br>131 | Girard<br>115 | Girard<br>136 | Girard<br>147 | Girard<br>122 | Girard<br>133 | Girard<br>159 | Girard<br>117 |
| LATITUDE | 16,700 ft. S<br>41° 50' | 6100 ft. S<br>41° 50' | 2800 ft. S<br>41° 50' | 700 ft. N<br>41° 45' | 3400 ft. N<br>41° 45' | 2500 ft. N<br>41° 45' | 12,500 ft. N<br>41° 45' | 1050 ft. N<br>41° 45' | 1200 ft. N<br>41° 45' | 1600 ft. N<br>41° 45' |
| LONGITUDE | 4700 ft. W<br>80° 15' | 13,500 ft. W<br>80° 25' | 13,400 ft. W<br>80° 25' | 300 ft. W<br>80° 15' | 1800 ft. E<br>80° 25' | 800 ft. W<br>80° 15' | 2400 ft. E<br>80° 25' | 950 ft. W<br>80° 25' | 1600 ft. E<br>80° 25' | 4800 ft. W<br>80° 15' |
| DATE COMPLETED | 6-17-64 | 2-14-64 | 5-29-64 | 4-15-64 | 7-27-64 | 9-11-64 | 6-21-64 | 8-3-64 | 9-10-64 | 4-21-64 |
| ELEVATION | 1149KB | 1022RT | 1002KB | 1181RT | 1096RT | 1150KB | 1052RT | 1157RT | 1114RT | 1196DF |
| TULLY | 2305-2357 |  | 1960- | 2432-2485 |  | 2371-2426 | 2163-2193 | 2270- | 2220- | 2420-2470 |
| ONONDAGA | 2483- | 2150?- | 2125- | 2611- | 2355- | 2550- | 2330- | 2429- | 2386-<br>SG at 2590 | 2596- |
| ORISKANY | 2672-2677<br>SW at 2671 | 2445?-<br>SW at 2445 | 2375?-<br>SW | 2809-2816±<br>SW at 2822 | 2598?-<br>SW at 2598 | 2740-2745<br>SW at 2762 | 2535-<br>SW | 2635- | 2592-<br>SW at 2600 | 2792 (Horizon) |
| SALINA | 2745- |  |  | 2882- |  | 2820- | 2609 |  |  | 2699 |
| GUELPH-LOCKPORT<br>Black Water | 3381- | 3160 | 3169 | 3546-<br>3675 | 3440 | 3485-<br>3620 | 3245-<br>3382 |  | 3270?-<br>3460 | 3524-<br>3678 |
| CLINTON<br>IRONDEQUOIT | 3625<br>3700-3709 | 3385-3392 | 3340-3347 | 3788-<br>3862-3871 | 3631-3641 | 3729-<br>3803-3812 | 3485-<br>3550-3561 | 3682- | 3637-3647 | 3766-<br>3840-3850 |
| MEDINA | 3737- | 3425?-<br>SG,SO. | 3375-<br>SG 3415-43 | 3902- | 3676-<br>gas 3755-3775 | 3842- | 3590-<br>Gas 3666-3698 |  | 3669- | 3881-<br>gas at 3954 |
| QUEENSTON | 3917- | 3605- | 3563- | 4080- |  | 4022- | 3770- |  | 3857-<br>SG | 4056- |
| MIDDLE ORDOVICIAN LIMESTONES |  | 5400± ? |  |  |  |  | 5640- |  |  |  |
| GATESBURG |  | 6100± ?<br>SW @ 6111 |  |  |  |  | 6284-<br>SW at 6305 |  |  |  |
| TOTAL DEPTH | 3938 | 6364 | 3600 | 4117 | 3793 | 4048 | 6337 | 3838 | 3887 | 4086 |
| DEEPEST FORMATION REACHED | Queenston | Gatesburg | Queenston | Queenston | Medina | Queenston | Gatesburg | Medina | Queenston | Queenston |
| RESULT | 800 Mcf gas<br>AF<br>RP 1170 psi<br>12 hrs. | PB to Medina<br>811 Mcf gas<br>AF<br>RP 1055 psi<br>7 days | 1000 Mcf gas<br>AF<br>RP 1110 psi<br>10 days | 4000 Mcf gas<br>AF<br>RP 1200 psi<br>24 hrs. | 6000 Mcf gas<br>AF<br>RP 1200 psi<br>48 hrs. | 2000 Mcf gas<br>AF<br>RP 1250 psi<br>24 hrs. | PB to 3750<br>400 Mcf gas<br>AF<br>RP 980 psi<br>15 hrs. | 8350 Mcf gas<br>AF<br>RP 1180 psi<br>3 days | 1000 Mcf gas<br>AF<br>RP 1125 psi<br>12 hrs. | 5072 Mcf gas<br>AF<br>RP 1135 psi<br>2 days |

## Table 12.—*Summarized records of deep wells, Continued*

Sheet 5

| MAP NUMBER | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY Permit Number | CRAWFORD 144 | CRAWFORD 146 | CRAWFORD 149 | CRAWFORD 150 | CRAWFORD 94 | CRAWFORD 108 | CRAWFORD | CRAWFORD 115 | CRAWFORD 133 | CRAWFORD 143 |
| NAME OF WELL | Boyd Reed 1 | J. Schwerthofer 1 | Mary Scott 1 | Mary Scott 2 | J. H. Scull 1 | Mary Sheenan (Slobodnjak) 1 | Mary Sheehan 2 | J. Guy Smith 1 | Mary Rak Smith 1 | Gladys Smock 1 |
| OPERATOR | Transamerican Petroleum Corp. | Ventura Oil Co. | James Drilling Co. | James Drilling Co. | Transamerican Petroleum Corp. | James Drilling Co. | James Drilling Co. | Transamerican Petroleum Corp. | Ventura Oil Co. | Burnham Gas Co. |
| TOWNSHIP | Cussewago | Spring | Cussewago | Cussewago | Spring | Spring | Spring | Hayfield | Spring | Spring |
| QUADRANGLE | Girard 139 | Girard 135 | Girard 146 | Girard 142 | Girard 113 | Girard 128 | Girard 155 | Girard 114 | Girard 126 | Girard 120 |
| LATITUDE | 2300 ft. N 41° 45' | 16,400 ft. S 41° 50' | 3900 ft. N 41° 45' | 4400 ft. N 41° 45' | 5100 ft. N 41° 45' | 2700 ft. N 41° 45' | 2400 ft. N 41° 45' | 700 ft. N 41° 45' | 2700 ft. N 41° 45' | 18,200 ft. S 41° 50' |
| LONGITUDE | 2400 ft. W 80° 15' | 9850 ft. W 80° 15' | 4350 ft. W 80° 15' | 2075 ft. W 80° 15' | 6000 ft. E 80° 25' | 8500 ft. E 80° 25' | 10,200 ft. E 80° 25' | 3150 ft. W 80° 15' | 6900 ft. W 80° 15' | 6200 ft. W 80° 20' |
| DATE COMPLETED | 8-12-64 | 8-7-64 | 8-25-64 | 8-20-64 | 2-19-64 | 6-15-64 | 10-16-64 | 3-19-64 | 5-27-64 | 7-9-64 |
| ELEVATION | 1178RT | 1150RT | 1194KB | 1157KB | 1060KB | 1035KB | 1011KB | 1219KB | 1197KB | 1115G |
| TULLY |  | 2310-2360 | 2420-2470 | 2380-24[illegible]0 |  |  | 2180-2205 | 2462-2510 | 2418-2462 | 2312- |
| ONONDAGA | 2588- | 2488- | 2596-<br>SW at 2600 | 2545 | 2335?- | 2353?- | 2340- | 2637- | 2588- | 2382- |
| ORISKANY | 2780-<br>SW | 2683-2688 | 2788-2792 | 2752-2756 | 2527?-<br>SSG at 2527?<br>SW | 2560?-<br>SW at 2560 | 2549?-<br>SW at 2549 | 2832-2834<br>SW | 2780-<br>SW | 2581-2588?<br>SW @ 2584 |
| SALINA |  | 2754- | 2866- | 2827- |  |  |  | 2919- | 2854- |  |
| GUELPH - LOCKPORT Black Water | 3486-<br>3696? | 3376- | 3516-<br>3655 | 3432-<br>3630 | 3400 | 3276-<br>3495 | 3390 | 3572-<br>3755 | 3520- | 3435 |
| CLINTON IRONDEQUOIT | 3830- | 3620-<br>3690-3700 | 3755-<br>3833-3842 | 3722-<br>3798-3807 | 3580?-3590? | 3523-<br>3590-3600 | 3601- | 3814<br>3888-3897 | 3759-<br>3833-3843 | 3622- |
| MEDINA | 3870± ?<br>1000 Mcf at 3953? | 3728- | 3871-<br>SG | 3836- | 3636?- | 3628-<br>Gas at 3688-98 | 3631-<br>SG | 3927-<br>2000 Mcf at 4000 | 3872-<br>Gas at 3908 | 3666?-<br>SG at 3700,3748 |
| QUEENSTON | 4083? |  | 4048- | 4018- | 3786?- | 3810- | 3792- | 4110- |  |  |
| MIDDLE ORDOVICIAN LIMESTONES |  |  |  |  | 5660?- | 5698- |  |  |  |  |
| GATESBURG |  |  |  |  | 6300?-<br>7000 Mcf gas | 6320?-<br>SW at 6380 |  |  |  |  |
| TOTAL DEPTH | 4093 | 3875 | 4075 | 4068 | 6398 | 6424 | 3828 | 4126 | 4007 | 3760 |
| DEEPEST FORMATION REACHED | Queenston | Medina | Queenston | Queenston | Gatesburg | Gatesburg | Queenston | Queenston | Medina | Medina |
| RESULT | 2000 Mcf gas<br>AF<br>RP 1150 psi | 1109 Mcf gas and some oil<br>AF<br>RP 1180 psi | 1200 Mcf gas<br>AF<br>RP 1270 psi<br>24 hrs. | 3000 Mcf gas<br>AF<br>RP 1270 psi<br>48 hrs. | 2,590 Mcf gas after acidizing<br>RP 2150 psi<br>40 hrs.<br>Discovery well Scull Pool | PB to 3788<br>3600 Mcf gas<br>AF<br>RP 1160 psi<br>12 hrs. | 1500 Mcf gas<br>AF<br>RP 1280 psi<br>12 hrs | 15,000 Mcf gas<br>AF<br>RP 1200 psi | 2000 Mcf gas<br>AF<br>RP 1105 psi<br>72 hrs | 857 Mcf gas<br>AF<br>Abandoned |

## Table 12.–*Summarized records of deep wells, Continued*

Sheet 6

| MAP NUMBER | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY Permit Number | CRAWFORD 137 | CRAWFORD 173 | CRAWFORD 165 | CRAWFORD 166 | CRAWFORD 163 | CRAWFORD 119 | CRAWFORD 152 | CRAWFORD 154 | CRAWFORD 105 | CRAWFORD 100 |
| NAME OF WELL | G. S. Sprouse 1 | Stephen Szalay 1 | Mary Tautin 1 | Donald Tyler 1 | John Vendel 1 | N. Voorhees 1 | Carl Wiard 1 | M. K. Fields 1 | F. Fladie 1 | George Locke 1 |
| OPERATOR | Transamerican Petroleum Corp. | Felmont Oil Corp. | Ventura Oil Co. | Ventura Oil Co. | Transamerican Petroleum Corp. | Transamerican Petroleum Corp. | Ventura Oil Co. | Transamerican Petroleum Corp. | Ventura Oil Co. | Transamerican Petroleum Corp. |
| TOWNSHIP | Beaver | Conneaut | Cussewago | Beaver | Summerhill | Beaver | Spring | Hayfield | Hayfield | Hayfield |
| QUADRANGLE | Girard 119 | Girard 160 | Girard 171 | Girard 129 | Girard 130 | Girard 110 | Girard 144 | Linesville 30 | Linesville 24 | Linesville 23 |
| LATITUDE | 11,250 ft. S 41° 50' | 1850 ft. N 41° 45' | 6350 ft. N 41° 45' | 8300 ft. N 41° 45' | 1500 ft. N 41° 45' | 1400 ft. N 41° 50' | 9800 ft. S 41° 50' | 600 ft. S 41° 45' | 4900 ft. S 41° 45' | 2800 ft. S 41° 45' |
| LONGITUDE | 7750 ft. W 80° 25' | 2500 ft. E 80° 25' | 1000 ft. W 80° 15' | 3800 ft. W 80° 25' | 7500 ft. E 80° 25' | 7800 ft. W 80° 25' | 13,600 ft. W 80° 15' | 1500 ft. W 80° 15' | 1750 ft. W 80° 15' | 3500 ft. W 80° 15' |
| DATE COMPLETED | 4-28-64 | 11-5-64 | 10-29-64 | 5-29-64 | 6-14-64 | 5-13-64 | 8-2-64 | 8-24-64 | 2-19-64 | 1-19-64 |
| ELEVATION | 1037 | 1098KB | 1137KB | 1121KB | 1054KB | 1000DF | 1169 RT | 1265DF | 1348 DF | 1306RT |
| TULLY | | 2226- | 2335-2388 | 2195-2213 | 2200?-2230? | | 2265-2310 | | 2631- | 2577-2628 |
| ONONDAGA | 2177- | 2388- | 2517- | 2353- | 2360- | 2159- | 2447- | 2670- | 2805- | 2750- |
| ORISKANY | 2414?-<br>SW at 24 5 | 2588- | 2716-2720<br>1000 Mcf at 2718 | 2572-2575<br>SW at 2574 | 2560-<br>SW at 2565 | 2394-2400<br>SW at 2400 | 2652-2654?<br>SW at 2655 | 2875-<br>SW at 2875 | 3008-3017<br>SW at 3010 | 2947?-<br>SW at 2965 |
| SALINA | | | 2734- | 2645- | | | 335[illegible]- | | 3077- | 3020- |
| GUELPH-LOCKPORT Black Water | 3280 | 3302?-<br>3405 | 3440- | 3278- | 3420 | 3160 | 3350- | 3720 | 3746- | 3692-<br>3815 |
| CLINTON IRONDEQUOIT | 3452-3462 | 3638- | 3680-<br>3760-3766 | 3518-<br>3583-3593 | 3615-3625 | 3324-3334 | 3590-<br>3661-3670 | 3955-3965 | 3986-<br>4060-4068 | 3932-<br>4006-4016 |
| MEDINA | 3486- | 3680?-<br>1000 Mcf 3725-85 | 3795- | 3620-<br>gas at 3670 | 3655?-<br>SG | 3356?- | 3698-<br>gas at 3770 | gas at 4020-50 | 4099-<br>gas and oil at 4152 | 4046-<br>1000 Mcf at 4110 |
| QUEENSTON | 3670- | | | 3803- | | 3536?- | | 4142- | | 4224- |
| MIDDLE ORDOVICIAN LIMESTONES | | | | 5660- | | 5335- | | | | |
| GATESBURG | | | | 6299-<br>SW at 6243 | | 5975+ ?<br>SG 6004-6007? | | | | |
| TOTAL DEPTH | 3682 | 3857 | 3977 | 6352 | 3816 | 6191 | 3832 | 4175 | 4267 | 4244 |
| DEEPEST FORMATION REACHED | Queenston | Medina | Medina | Gatesburg | Medina | Gatesburg | Medina | Queenston | Medina | Queenston |
| RESULT | 980 Mcf gas<br>AF<br>RP 1090 psi<br>3 days | 1600 Mcf gas<br>and SW AF<br>RP 1125 psi<br>15 hrs. | 5882 Mcf gas<br>AF in Medina<br>RP 1225 psi<br>12 hrs. | PB at 3800<br>3500 Mcf gas<br>and some oil?<br>AF<br>RP 1125 psi | 3100 Mcf gas<br>AF<br>RP 1190 psi<br>48 hrs. | 1640 Mcf gas<br>and some oil?<br>after acidizing<br>RP 2200 psi<br>Discovery Well<br>Beaver Center<br>Pool | 400 Mcf gas<br>AF<br>RP 1010 psi<br>12 hrs. | 4000 Mcf gas<br>AF<br>RP 1200 psi<br>14 hrs. | 1000 Mcf gas<br>and 12 Bbls oil<br>AF<br>RP 1075 psi | 2115 Mcf gas<br>AF<br>RP 1130 psi<br>48 hrs. |

## Table 12.—*Summarized records of deep wells, Continued*

Sheet 7

| MAP NUMBER | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 67 | 69 | 70 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY Permit Number | CRAWFORD 128 | CRAWFORD 172 | CRAWFORD 113 | CRAWFORD 155 | CRAWFORD 167 | CRAWFORD 135 | CRAWFORD 159 | CRAWFORD 124 | CRAWFORD 98 | CRAWFORD 125 |
| NAME OF WELL | Earl Miller 1 | Elmer Onderko 2 | Roy Reynolds 1 | Robert Stark 1 | Joseph Vendel 1 | V. H. Walner 1 | Vernon Bish 1 | M. Constantinovich 1 | B. & R. Hansen 1 | C. & B. Houck 1 |
| OPERATOR | Transamerican Petroleum Corp. | Transamerican Petroleum Corp. | Ventura Oil Co. | Ventura Oil Co. | Transamerican Petroleum Corp. | Transamerican Petroleum Corp. | James Drilling Co. | Ventura Oil Co. | Ventura Oil Co. | Ventura Oil Co. |
| TOWNSHIP | Hayfield | Conneaut | Hayfield | Conneaut | Conneaut | Hayfield | Hayfield | Hayfield | Hayfield | Hayfield |
| QUADRANGLE | Linesville 27 | Linesville 31 | Linesville 25 | Linesville 28 | Linesville 29 | Linesville 26 | Meadville 31 | Meadville 27 | Meadville 22 | Meadville 30 |
| LATITUDE | 3000 ft. S<br>41° 45' | 850 ft. S<br>41° 45' | 7150 ft. S<br>41° 45' | 2650 ft. S<br>41° 45' | 800 ft. S<br>41° 45' | 800 ft. S<br>41° 45' | 2900 ft. S<br>41° 45' | 12,800 ft. S<br>41° 45' | 4100 ft. S<br>41° 45' | 13,800 ft. S<br>41° 45' |
| LONGITUDE | 4950 ft. W<br>80° 15' | 1400 ft. E<br>80° 25' | 1050 ft. W<br>80° 15' | 3400 ft. W<br>80° 25' | 7100 ft. E<br>80° 25' | 4900 ft. W<br>80° 1[illegible]' | 12,700 ft. W<br>80° 10' | 12,750 ft. W<br>80° 10' | 11,600 ft. W<br>80° 10' | 6300 ft. E<br>80° 15' |
| DATE COMPLETED | 6-21-64 | 9-25-64 | 2-29-64 | 7-7-64 | 7-29-64 | 5-23-64 | 9-24-64 | 5-13-64 | 1-26-64 | 7-2-64 |
| ELEVATION | 1296KB | 1120KB | 1348TC | 1172KB | 1077KB | 1264KB | 1160KB | 1175DF | 1205KB | 1110KB |
| TULLY | 2554- | 2250- | 2650-2714 | 2309- | 2210- |  | 2465-2530 | 2508- | 2520-2580 | 2470-2523 |
| ONONDAGA | 2725- | 2407- | 2826- | 2466- | 2370- | 2640?- | 2646- | 2686- | 2706- | 2645- |
| ORISKANY | 2927- | 2608-<br>SW at 2613 | 3029-<br>SW at 3032 | 2672?-<br>SW at 2674 | 2570-<br>SW at 2572 | ?<br>SW at 2880 | 2843-2850 | 2894?<br>SW at 2905 | 2924- | 2836-<br>SW at 2840 |
| SALINA |  |  | 3096- |  |  |  | 2922- | 2961- | 2992- | 2920- |
| GUELPH-LOCKPORT Black Water | 3805 | 3486 | 3768- |  | 3427 | 3752 | 3590-<br>3725 | 3660- | 3652- | 3600- |
| CLINTON IRONDEQUOIT | 3982-3992 | 3669-3679 | 4006-<br>4084-4093 | 3731- | 3625-3635 | 3908-3918 | 3826-<br>3905-3914 | 3900-<br>3976-3984 | 3886-<br>3965-3974 | 3841-<br>3919-3928 |
| MEDINA | 4022± -<br>SG 4090, SO | SG | 4124-<br>Gas | 3770± -<br>Gas at 3816 | 3665± -<br>SG at 3718 | 3935± ?<br>SG at 4015-30<br>SO | 3944- | 4017-<br>Gas at 4055 | 4008-<br>50 Mcf at 4074 | 3962-<br>SG at 4006 |
| QUEENSTON | 4200?- |  |  |  |  | 4140?- | 4127- |  |  |  |
| MIDDLE ORDOVICIAN LIMESTONES |  |  |  |  |  |  |  |  |  |  |
| GATESBURG |  |  |  |  |  |  |  |  |  |  |
| TOTAL DEPTH | 4250 | 3922 | 4287 | 3900 | 3900 | 4145? | 4168 | 4160? | 4170 | 4097 |
| DEEPEST FORMATION REACHED | Queenston | Queenston | Medina | Medina | Medina | Queenston | Queenston | Medina | Medina | Medina |
| RESULT | 300 Mcf gas<br>& 20 bbls. oil<br>AF<br>RP 1100 Psi | Not fractured<br>Abandoned | 1000 Mcf gas<br>AF<br>RP 1150 psi | 825 Mcf gas<br>AF<br>RP 1160 psi<br>9 hrs. | 2850 Mcf gas<br>AF<br>RP 1160 psi<br>10 days | 610 Mcf gas<br>AF<br>RP 1055 psi | 2100 Mcf gas<br>AF<br>RP 1275 psi<br>24 hrs. | 1500 Mcf gas<br>AF<br>RP 1225 psi<br>48 hrs. | 1,179 Mcf gas<br>AF<br>RP 1175 psi | 700 Mcf gas<br>AF<br>RP 1180 psi<br>3 hrs. |

# Table 12.—*Summarized records of deep wells, Continued*

Sheet 8

| MAP NUMBER | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY<br>Permit Number | CRAWFORD<br>93 | CRAWFORD<br>96-P | CRAWFORD<br>121 | CRAWFORD<br>116 | CRAWFORD<br>118 | CRAWFORD<br>106 | CRAWFORD<br>92 | CRAWFORD<br>122 | CRAWFORD<br>91 | CRAWFORD<br>166 |
| NAME OF WELL | Leonard Humes 1 | Charlotte Kapanick 1 | Geo. T. Keyser 1 | G. W. King 1 | Irvin Lybarger 1 | Marfenski-Woods 1 | M. Price 1 | Arthur Reichel 1 | R. & C. Schlosser 1 | Emil Weber 1 |
| OPERATOR | Ventura Oil Co. | James Drilling Co. | James Drilling Co. | Ventura Oil Co. | Ventura Oil Co. | Transamerican Petroleum Corp. | Ventura Oil Co. | James Drilling Co. | Ventura Oil Co. | James Drilling Co. |
| TOWNSHIP | Hayfield | Hayfield | Hayfield | Hayfield | Hayfield | Hayfield | Hayfield | Hayfield | Hayfield | Hayfield |
| QUADRANGLE | Meadville 21 | Meadville 24 | Meadville 29 | Meadville 25 | Meadville 26 | Meadville 23 | Meadville 18 | Meadville 28 | Meadville 19 | Meadville 32 |
| LATITUDE | 4400 ft. S<br>41° 45' | 6500°ft. S<br>41 45' | 1850 ft. S<br>41° 45' | 4200 ft. S<br>41° 45' | 10,150 ft. S<br>41° 45' | 9450 ft. S<br>41° 45' | 11,400 ft. S<br>41° 45' | 2400 ft. S<br>41° 45' | 8700 ft. S<br>41° 45' | 7000 ft. S<br>41° 45' |
| LONGITUDE | 6800 ft. E<br>80° 15' | 300 ft. E<br>80° 15' | 12,150 ft. W<br>80° 10' | 1800 ft. E<br>80° 15' | 3800 ft. E<br>80° 15' | 10,950 ft. W<br>80° 10' | 10,650 ft. W<br>80° 10' | 6500 ft. E<br>80° 15' | 4100 ft. W<br>80° 10' | 8300 ft. W<br>80° 10' |
| DATE COMPLETED | 1-4-64 | 3-17-64 | 7-7-64 | 5-20-64 | 5-1-64 | 2-8-64 | 1-31-64 | 6-19-64 | 1-9-64 | 10-24-64 |
| ELEVATION | 1115KB | 1250G | 1212RT | 1168DF | 1128KB | 1312KB | 1305KB | 1113RT | 1272KB | 1226KB |
| TULLY | 2420- |  | 2516-2588 | 2479- | 2464-2518 | 2666-2729 | 2653-2712 | 2402-2474 | 2640-2707 | 2565-2630 |
| ONONDAGA | 2602?- | 2765- | 2698- | 2655- | 2641-<br>SG at 2736 | 2848- | 2835- | 2584- | 2829- | 2748- |
| ORISKANY | 2785± -<br>SW at 2802 | 2970-<br>SW at 2975 | 2894-2903<br>SW | ?<br>SW at 2870 | 2833-2838<br>SW at 2832 | 3042-3047<br>SW | 3028-3033? | 2781-2788<br>SW at 2782 | 3022-<br>SW at 3022 | 2938- |
| SALINA | 2861- |  | 2990- |  | 2913- | 3124- | 3113- | 2856- | 3100- | 3017- |
| GUELPH-LOCKPORT<br>Black Water | 3538- | 3860 | 3644-<br>3760 |  | 3586- | 3798-<br>3920 | 3800- | 3518- | 3767- | 3692-<br>3760 |
| CLINTON<br>IRONDEQUOIT | 3774-<br>3848-3858 | 3951-<br>4037-4048 | 3883-<br>3960-3968 | 3912-3921 | 3826-<br>3905-3913 | 4036-<br>4112-4122 | 4031-<br>4112-4122 | 3757-<br>3836-3843 | 4008-<br>4087-4094 | 4006-4015 |
| MEDINA | 3890-<br>gas 3951-3958 | 4078-<br>No gas BF | 4001- | 3952- | 3945-<br>gas at 3980 | 4154-<br>200 Mcf at 4200 | 4155-<br>gas & oil 4220 | 3875- | 4125-<br>50 Mcf at 4195 | 4050-<br>SG BF |
| QUEENSTON |  | 4267- | 4183- |  |  | 4340- |  | 4056- |  | 4247- |
| MIDDLE ORDOVICIAN LIMESTONES |  |  |  |  |  |  |  |  |  |  |
| GATESBURG |  |  |  |  |  |  |  |  |  |  |
| TOTAL DEPTH | 4035 | 4280 | 4224 | 4110 | 4075 | 4372 | 4330 | 4078 | 4306 | 4277 |
| DEEPEST FORMATION REACHED | Medina | Queenston | Queenston | Medina | Medina | Queenston | Medina | Queenston | Medina | Queenston |
| RESULT | 1475 Mcf gas<br>AF<br>RP 1150 psi<br>8 hrs. | 125 Mcf gas<br>AF<br>RP 700 psi<br>24 hrs. | 1000 Mcf gas<br>AF in Medina<br>RP 1280 psi<br>48 hrs. | 1039 Mcf gas<br>and some oil<br>AF in Medina<br>RP 1125 psi<br>48 hrs. | 1040 Mcf gas<br>AF<br>RP 1150 psi<br>48 hrs. | 1972 Mcf gas<br>AF<br>RP 1175 psi | 1000 Mcf gas<br>& 50 bbls oil<br>AF<br>RP 1150 psi<br>15 hrs. | 1100 Mcf gas<br>AF<br>RP 1280 psi<br>48 hrs. | 850 Mcf gas<br>AF<br>RP 1150 psi<br>12 hrs. | 1430 Mcf gas<br>AF<br>RP 1270 psi<br>24 hrs. |

## Table 12.—*Summarized records of deep wells, Continued*

Sheet 9

| MAP NUMBER | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY<br>Permit Number | CRAWFDRD<br>89 | CRAWFORD<br>145-P | CRAWFORD<br>151 | CRAWFORD<br>131-P | ERIE<br>109 | ERIE<br>137 | ERIE<br>130 | ERIE<br>129 | ERIE<br>114 | ERIE<br>125 |
| NAME OF WELL | John Yocina<br>1 | Homer Barber<br>1 | Joseph Marzka<br>1 | Walter Morton<br>1 | Hammermill<br>2 | V. Anderson<br>1 | C. Bossard<br>1 | O. & E. Brown<br>1 | W. Brown<br>1 | Case<br>1 |
| OPERATOR | Transamerican Petroleum Corp. | D. C. Garrett | D. C. Garrett | D. C. Garrett | Hammermill Paper Co. | James Drilling Co. | Ventura Oil Co. | Ventura Oil Co. | Ventura Oil Co. | Betz Oil, Inc. |
| TOWNSHIP | Hayfield | Bloomfield | Rockdale | Bloomfield | City of Erie | Conneaut | Conneaut | Conneaut | Conneaut | Conneaut |
| QUADRANGLE | Meadville<br>20 | Union City<br>8 | Union City<br>7 | Union City<br>6 | Erie<br>110 | Girard<br>164 | Girard<br>154 | Girard<br>153 | Girard<br>140 | Girard<br>163 |
| LATITUDE | 200 ft. S<br>41° 45' | 14,300 ft. S<br>41° 50' | 3200 ft. S<br>41° 50' | 1100 ft. N<br>41° 50' | 8700 ft. S<br>42° 10' | 10,200 ft. N<br>41° 50' | 7450 ft. S<br>41° 55' | 6300 ft. S<br>41° 55' | 9950 ft. S<br>41° 55' | 3800 ft. S<br>41° 55' |
| LONGITUDE | 1100 ft. E<br>80° 15' | 8700 ft. E<br>79° 55' | 5100 ft. W<br>79° 55' | 7000 ft. E<br>79° 55' | 12,900 ft. W<br>80° 00' | 8600 ft. W<br>80° 25' | 3500 ft. E<br>80° 30' | 1500 ft. E<br>80° 30' | 750 ft. W<br>80° 30' | 9000 ft. W<br>80° 25' |
| DATE COMPLETED | 2-6-64 | 8-1-64 | 9-18-64 | 7-12-64 | 8-29-64 | 11-23-64 | 10-11-64 | 9-25-64 | 8-13-64 | 10-19-64 |
| ELEVATION | 1168DF | 1555KB | 1438KB | 1655KB | 650 | 961G | 905DF | 948RT | 908KB | 937RT |
| TULLY | 2436-2488 | 3070-3162 | 2800-2880 | 3044-3124 | 1174-1265 | 1848- | 1647- | 1695- | 1660- | 1701?- |
| ONONDAGA | 2612- | 3300- | 3020- | 3276- | 1392- | 2012- | 1857- | 1904- | 1865- | 1864- |
| ORISKANY | 2804-2808 | 3484 (Horizon) | 3209 (Horizon) | 3465-<br>SW | 1658 (Horizon)<br>SW | 2280-<br>SW | 2110-<br>SW at 2112 | 2125-<br>SW at 2125 | 2112- | |
| SALINA | 2881- | 3537- | 3269- | 3520- | 1733- | 2356- | | | | |
| GUELPH-LOCKPORT<br>Black Water | 3549-<br>3690 | 4145-<br>4302 | 3869-<br>4002 | 4102-<br>4274 | 2120-<br>SW | 2920-<br>3125 | | | | |
| CLINTON<br>IRONDEQUOIT | 3791-<br>3868-3878 | 4392-<br>4478-4491 | 4110-<br>4194-4206 | 4345-<br>4430-4440 | 2358-<br>2432-2447 | 3155-<br>3223-3234 | 3057- | 3053- | 3074- | 3080- |
| MEDINA | 3908-<br>SG 3950 | 4526- | 4236- | 4476- | 2462- | 3260-<br>SG | gas at 3108 | gas at 3138 | gas at 3122 | |
| QUEENSTON | | 4702- | 4412- | 4649- | 2616- | | | | | |
| MIDDLE ORDOVICIAN LIMESTONES | | | 6336- | 5562- | 4323- | | | | | |
| GATESBURG | | | 7068-<br>SW at 7200 | 7294-<br>SW 7418-7440 | 5105-5590<br>SW | | | | | |
| TOTAL DEPTH | 4126? | 4760 | 7206 | 7440 | 5972 | 3365 | 3223 | 3260 | 3261 | 3220 |
| DEEPEST FORMATION REACHED | Queenston | Queenston | Gatesburg | Gatesburg | Precambrian | Medina | Medina | Medina | Medina | Medina |
| RESULT | 870 Mcf gas<br>AF<br>RP 1152 psi<br>7 days | 50 Mcf gas<br>and SW AF<br>RP 1250 psi<br>7 days<br>Abandoned | PB & acidized<br>Lockport<br>No gas after<br>treatment<br>Abandoned | Not fractured<br>Abandoned | Warrior 5590-<br>Potsdam 5914-<br>Schist 5952-<br>Drilled for<br>waste disposal | 3500 Mcf gas<br>AF<br>RP 700 psi<br>8 hrs. | 10,000 Mcf gas<br>AF<br>RP 1080 psi<br>12 hrs. | 4,000 Mcf gas<br>AF<br>RP 1090 psi<br>24 hrs. | 1904 Mcf gas<br>AF<br>RP 1100 psi | 2500 Mcf gas<br>AF<br>RP 1400? psi |

## Table 12.—*Summarized records of deep wells, Continued*

Sheet 10

| MAP NUMBER | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY<br>Permit Number | ERIE<br>112 | ERIE<br>116 | ERIE<br>[illegible] | ERIE<br>126 | ERIE<br>108 | ERIE<br>128 | ERIE<br>119 | ERIE<br>131 | ERIE<br>135 | ERIE<br>115-P |
| NAME OF WELL | James Case<br>1 | Conover<br>1 | L. J. Copeland<br>1 | Forinash<br>2 | Wesley Freeburg<br>1 | M. S. Freeburg<br>2 | J. Freeman<br>1 | B. Griffey<br>1 | M. M. Hope<br>1 | M. Hope<br>1 |
| OPERATOR | Worldwide Petroleum Corp. | J. S. Mc Cluskey | Worldwide Petroleum Corp. | James Drilling Co. | James Drilling Co. | James Drilling Co. | Worldwide Petroleum Corp. | Ventura Oil Co. | James Drilling Co. | PA. Gas Co. No. 1606 |
| TOWNSHIP | Conneaut | Conneaut | Conneaut | Conneaut | Conneaut | Conneaut | Conneaut | Conneaut | Conneaut | Conneaut |
| QUADRANGLE | Girard<br>116 | Girard<br>158 | Girard<br>152 | Girard<br>157 | Girard<br>124 | Girard<br>156 | Girard<br>143 | Girard<br>172 | Girard<br>165 | Girard<br>141 |
| LATITUDE | 15,250 ft. S<br>41° 55' | 2900 ft. S<br>41° 55' | 19,600 ft. S<br>41° 55' | 11,800 ft. N<br>41° 50' | 12,000 ft. N<br>41° 50' | 11,000 ft. N<br>41° 50' | 16,250 ft. S<br>41° 55' | 5000 ft. S<br>41° 55' | 9400 ft. N<br>41° 50' | 9200 ft. N<br>41° 50' |
| LONGITUDE | 10,250 ft. W<br>80° 25' | 7200 ft. W<br>80° 25' | 7450 ft. W<br>80° 25' | 11,300 ft. W<br>80° 25' | 8650 ft. W<br>80° 25' | 9550 ft. W<br>80° 25' | 12,400 ft. W<br>80° 25' | 6000 ft. E<br>80° 30' | 6900 ft. W<br>80° 25' | 4300 ft. W<br>80° 25' |
| DATE COMPLETED | 3-28-64 | 10-4-64 | 10-2-64 | 11-10-64 | 6-5-64 | 10-8-64 | 8-2-64 | 11-8-64 | 12-7-64 | 8-24-64 |
| ELEVATION | 953DF | 926RT | 954DF | 962RT | 947DF | 954RT | 961DF | 929DF | 965KB | 956DF |
| TULLY | | | 1847- | | 1814- | 1830-1860 | 1965- | | 1860- | |
| ONONOAGA | 1940- | 1866- | 2010- | 1995- | 1981- | 2035- | 1965- | 1854-<br>SW at 2072 | 2026- | 2019- |
| ORISKANY | 2212-<br>20 Mcf & SW at 2215 | 2140-2143<br>20 Mcf gas | 2264-<br>SW at 2264 | 2271-<br>SW at 2271 | 2240-<br>SW at 2240 | 2281-<br>SW at 2281 | 2217-<br>SW at 2217 | 2131- | 2284- | 2280-2288?<br>SW at 2284 |
| SALINA | | | | | | | | | 2361- | 2356- |
| GUELPH-LOCKPORT<br>Black Water | 3006 | | 3045 | 3135 | 3017 | 3076 | 3015 | | 2932-<br>3130 | 2927-<br>3091 |
| CLINTON<br>IRONDEQUOIT | 3174-3185 | 3073?- | 3232-3244 | 3220- | 3183- | 3229-3237 | 3182- | 3052- | 3173<br>3242-3254 | 3168-<br>3235-3249 |
| MEDINA | 3203- | gas at 3110 | SG at 3290 | 3262-<br>2500 Mcf at 3339 | 3204?- | 3255-<br>SG | | gas at 3137 | 3278-<br>30 Mcf gas | 3268-<br>31 Mcf 3316,3333 |
| QUEENSTON | | | | 3439- | | 3438- | 3380- | | 3447- | 3442- |
| MIOOLE ORDOVICIAN LIMESTONES | | | | | | | | | | |
| GATESBURG | | | | | | | | | | |
| TOTAL DEPTH | 3345 | 3237? | 3437 | 3450 | 3331 | 3461 | 3394 | 3232 | 3457 | 3448 |
| OEEPEST FORMATION REACHED | Medina | Medina | Medina | Queenston | Medina | Queenston | Queenston | Medina | Queenston | Queenston |
| RESULT | 8700 Mcf gas<br>AF | 2750 Mcf gas<br>AF<br>RP 1050 psi<br>12 hrs. BF? | 12,000 Mcf gas<br>AF<br>RP 945 psi<br>7 days | 4000 Mcf gas<br>AF<br>RP 1020 psi<br>24 hrs. | 10,000 Mcf gas<br>AF<br>RP 1050 psi<br>24 hrs. | 1500 Mcf gas<br>AF<br>RP 1080 psi<br>12 hrs. | 4500 Mcf gas<br>AF<br>RP 1020 psi<br>24 hrs. | 5500 Mcf gas<br>AF<br>RP 1080 psi | 2000 Mcf gas<br>AF<br>RP 900 psi<br>8 hrs. | Not fractured<br>Abandoned |

# Table 12.—*Summarized records of deep wells, Continued*

Sheet 11

| MAP NUMBER | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY<br>Permit Number | ERIE<br>123 | ERIE<br>124 | ERIE<br>105 | ERIE<br>132 | ERIE<br>113 | ERIE<br>117-P | ERIE<br>127 | ERIE<br>127 | ERIE<br>120 | ERIE<br>106 |
| NAME OF WELL | Bert Huntley<br>1 | Bert Huntley<br>2 | S. Jacobs<br>1 | Charles Kramer<br>1 | Llimantainen<br>1 | L. Lupean<br>1 | Marcy<br>1 | K. Miller<br>1 | A. Parknow<br>1 | G. & J. Pelc<br>1 |
| OPERATOR | Betz Oil, Inc. | Betz Oil, Inc. | Worldwide Petroleum Corp. | Pa. Gas Co. No. 1608 | Ventura Oil Co. | Pa. Gas Co. | James Drilling Co. | J. S. McCluskey | Worldwide Petroleum Corp. | J. S. McCluskey |
| TOWNSHIP | Conneaut | Conneaut | Conneaut | Elk Creek | Conneaut | Conneaut | Conneaut | Conneaut | Conneaut | Conneaut |
| QUADRANGLE | Girard<br>161 | Girard<br>170 | Girard<br>111 | Girard<br>166 | Girard<br>145 | Girard<br>149 | Girard<br>162 | Girard<br>127 | Girard<br>151 | Girard<br>123 |
| LATITUDE | 1250 ft. S<br>41° 55' | 400 ft. N<br>41° 55' | 15,000 ft. S<br>41° 55' | 14,750 ft. S<br>41° 55' | 7050 ft. S<br>41° 55' | 14,500 ft. S<br>41° 55' | 2950 ft. S<br>41° 55' | 14,300 ft. S<br>41° 55' | 17,300 ft. S<br>41° 55' | 18,700 ft. S<br>41° 55' |
| LONGITUDE | 7200 ft. W<br>80° 25' | 7800 ft. W<br>80° 25' | 3750 ft. W<br>80° 25' | 850 ft. W<br>80° 20' | 600 ft. W<br>80° 30' | 6000 ft. W<br>80° 20' | 7900 ft. W<br>80° 25' | 1100 ft. E<br>80° 30' | 4900 ft. W<br>80° 25' | 1650 ft. W<br>80° 30' |
| DATE COMPLETED | 8-6-64 | 9-2-64 | 1-14-64 | 12-29-64 | 8-19-64 | 10-5-64 | 11-25-64 | 5-28-64 | 9-8-64 | 5-5-64 |
| ELEVATION | 916RT | 820RT | 917DF | 964DF | 920RT | 1036KB | 919DF | 953G | 926DF | 963DF |
| TULLY | 1667- | 1559- |  |  | 1660- | 1922-1959 | 1700- |  | 1845- |  |
| ONONDAGA | 1831- | 1721- | 1917- | 2036- | 1872- | 2100- | 1?00- | 1910- | 2000- | 1933- |
| ORISKANY | 2111-<br>SW | 2000± - | 2176?-<br>SW at 2182<br>SG at 2178 | 2290?-2302? | 2106- | 2356-2365 | 2146-2154? | 2204-<br>SW at 2204 | 2280-<br>SW at 2285 | 2241-<br>SW at 2241 |
| SALINA |  |  |  | 2378- |  | 2442- | 2237- |  |  |  |
| GUELPH-LOCKPORT<br>Block Water | 3093 |  | 2945 | 2940-<br>3073 |  | 3005-<br>3101-3123 | 2763-<br>2895 | 2930 | 2990 | 2980 |
| CLINTON<br>IRONDEQUOIT | 3038-3052 | 2933-2946 | 3160?- | 3180-<br>3248-3258 | 3064- | 3242-<br>3310-3322 | 3003-<br>3070-3082 | 3141-3153 | 3180-3192 | 3174-3188 |
| MEDINA |  |  | SG 3241-51<br>and 3256-62 | 3276-<br>156 Mcf 3339-47 | gas at 3104<br>Whirlpool 3261 | 3342-<br>SG 3381-3434 | 3100-<br>SG | 3173-<br>SSG | 3208- | 3210-<br>5 Mcf at 3274 |
| QUEENSTON |  |  |  | 3454- |  | 3516- | 3268- |  |  |  |
| MIDDLE ORDOVICIAN LIMESTONES |  |  |  |  |  |  |  |  |  |  |
| GATESBURG |  |  |  |  |  |  |  |  |  |  |
| TOTAL DEPTH | 3211 | 3102 | 3334 | 3466 | 3272 | 3526 | 3303 | 3369 | 3459 | 3331 |
| DEEPEST FORMATION REACHED | Medina | Medina | Medina | Queenston | Queenston? | Queenston | Queenston | Queenston | Queenston | Medina |
| RESULT | 1490 Mcf gas<br>AF<br>RP 1065 psi<br>12 hrs. | 2100 Mcf gas<br>AF<br>RP 1080 psi<br>12 hrs. | 1000 Mcf gas<br>and 10 bbls.<br>oil from Medina<br>AF<br>RP 1120 psi | 499 Mcf gas<br>AF<br>RP 900 psi<br>110 hrs. | 1759 Mcf gas<br>and 50 AF<br>RP 1100 psi<br>12 hrs. | Not fractured<br>Abandoned | 1360 Mcf gas<br>AF<br>RP 975 psi<br>24 hrs. | Not fractured<br>Abandoned | 500 Mcf AF<br>in Medina<br>RP 1045 psi | 7000 Mcf gas<br>AF<br>RP 1040 psi<br>48 hrs. |

## Table 12.—*Summarized records of deep wells, Continued*

Sheet 12

| MAP NUMBER | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY<br>Permit Number | ERIE<br>111 | ERIE | ERIE<br>118 | ERIE<br>110 | FAYETTE<br>41-D-P | FAYETTE<br>45 | INDIANA<br>580-P | JUNIATA<br>1 | LACKAWANNA<br>11 | LAWRENCE<br>7 |
| NAME OF WELL | L. Scott<br>1 | L. Scott<br>2 | G. Thornton<br>1 | Wright<br>1 | Leo F. Heyn<br>1 | Pa. Tract 1<br>(Mc Kissick)<br>1 | Albert Miller<br>1 | Lost Creek Rod & Gun Club (Shade Mt. Unit) 1 | J. Lally<br>1 | G. H. Hohmann<br>1 |
| OPERATOR | Worldwide Petroleum Corp. | Worldwide Petroleum Corp. | Worldwide Petroleum Corp. | Newmac Oil & Gas Co. | Wm. E. Snee et al | Wm. E. Snee et al | NYSNG Corp.<br>N-950 | Shell Oil Co. | Humble Oil & Refining Co. | The Peoples Nat. Gas Co. |
| TOWNSHIP | Conneaut | Conneaut | Conneaut | Conneaut | South Union | Wharton | N. Mahoning | Fayette | Greenfield | Scott |
| QUADRANGLE | Girard<br>118 | Girard<br>167 | Girard<br>148 | Girard<br>137 | Uniontown<br>6 | Uniontown<br>40 | Smicksburg<br>2 | Mifflintown<br>1 | Dundaff<br>1 | Mercer<br>3 |
| LATITUDE | 17,050 ft. S<br>41° 55' | 16,350 ft. S<br>41° 55' | 16,750 ft. S<br>41° 55' | 11,100 ft. N<br>41° 50' | 6500 ft. N<br>39° 50' | 14,200 ft. S<br>39° 50' | 10,700 ft. N<br>40° 50' | 7300 ft. N<br>40° 40' | 10,250 ft. N<br>41° 35' | 11,950 ft. S<br>41° 05' |
| LONGITUDE | 8900 ft. W<br>80° 25' | 6800 ft. W<br>80° 25' | 10,550 ft. W<br>80° 25' | 1500 ft. E<br>80° 30' | 1700 ft. E<br>79° 40' | 6900 ft. W<br>79° 40' | 3500 ft. W<br>79° 00' | 8500 ft. W<br>77° 15' | 6000 ft. E<br>75° 35' | 2200 ft. W<br>80° 10' |
| DATE COMPLETED | 4-17-64 | 11-1-64 | 6-27-64 | 6-26-64 | 8-16-64 | 8-24-64 | 9-19-64 | 10-17-64 | 12-24-64 | 7-8-64 |
| ELEVATION | 945G | 944DF | 948DF | 970G | 2336KB | 2581KB | 1591DF | 1531KB | 1670 | 1286DF |
| TULLY |  | 1798- |  |  | 6042-6150 | 6538-6646 | 6902-7057 |  | TD about 300 ft. above Tully | 4441-4504 |
| ONONDAGA LIMESTONE<br>CHERT | 1960- | 1962- | 1975- | 1978- | 6595- | 7055-<br>SG at 7083 | 7525-<br>7538-<br>gas at 7565 |  |  | 4612- |
| ORISKANY | 2229-<br>SW at 2229 | 2220-<br>SW at 2225 | 2240-<br>SW at 2250 | 2231-<br>SW at 2231 | 6780-<br>Shriver 6840? | 7222-<br>Shriver 7328 | 7621-<br>gas at 7631<br>Shriver?-7632 |  |  | 4764-<br>Shriver?-4782 |
| HELDERBERG |  |  |  |  | 6882-<br>Keyser 7165- | 7482- | 7642? | Reedsville<br>0-2900 |  | 4860-<br>Keyser-4890?- |
| SALINA |  |  |  |  | Tonoloway 7466<br>Wills Creek 9599 |  |  | Antes 2900-3798<br>Mid Ordovician limestones<br>3798-5400? |  |  |
| GUELPH-LOCKPORT | Black Water<br>2975 | Black Water<br>3000 | Black Water<br>3007 | Black Water<br>2946 | McKenzie-<br>Rochester- |  |  | Lower Ordovician carbonates<br>5400?-8450± ? |  |  |
| CLINTON | Irondequoit<br>3182- | Irondequoit<br>3190-3199 | Irondequoit<br>3200-3215 | Irondequoit<br>3187- | Keefer? 10,305<br>Rose Hill 10,345<br>Fault |  |  | Fault at 6290<br>Conococheague<br>8450± ? |  |  |
| MEDINA | 3219?- |  | 3234-<br>SG | 3225- | Tuscarora-<br>11,318 |  |  | SW 9398,9665 |  |  |
| QUEENSTON |  |  |  | 3384- |  |  |  |  |  |  |
| TOTAL DEPTH | 3364 | 3350 | 3339 | 3441 | 11,566 | 7505 | 7710 | 10,036 | 5408 | 4920 |
| DEEPEST FORMATION REACHED | Medina | Medina | Medina | Queenston | Tuscarora | Helderberg | Helderberg | Conococheague | Brallier | Keyser? |
| RESULT | 4500 Mcf gas<br>AF in Medina<br>RP 1090 psi | 151 Mcf gas<br>AF in Medina<br>RP 730 psi | 250 Mcf gas<br>AF<br>RP 1020 psi<br>36 hrs. | 250 Mcf gas and 3 to 5 bbls. oil AF from Medina<br>RP 950 psi<br>24 hrs. | Old well drilled deeper. Original TD 8450. 2000 Mcf AF from Tuscarora<br>RP 4400 psi<br>Discovery Well<br>Heyn Pool | 460 Mcf gas & SW in Oriskany<br>Not fractured<br>Abandoned | 700 Mcf and 150 gal SW/hr.<br>AF<br>Abandoned | Abandoned | Abandoned | Abandoned |

# Table 12.—*Summarized records of deep wells, Continued*

Sheet 13

| MAP NUMBER | | 121 | 122 | 123 | 124 | 126 | 126 | 121 | 126 | 124 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY Permit Number | | MC KEAN 3173 | SOMERSET 31 | SOMERSET 30 | TIOGA 28 | TIOGA 34 | TIOGA 35 | TIOGA 29 | TIOGA 25 | TIOGA 27 | TIOGA 33 |
| NAME OF WELL | | Corydon Prospect Wt. 3699 No. 1 | D. J. Beachly 1 | R. D. Shumaker 1 | G. H. Bean 1 | J. F. Hegmann 1 | F. E. Sprague 1 | C. D. Ackley 2 | Butler 1 | B. A. Griffin 2 | Francis Johnson 2 |
| OPERATOR | | Anchor Gas Co. | Shell Oil Co. | Shell Oil Co. | NYSNG Corp. N-916-S | NYSNG Corp. N-930-S | NYSNG Corp. N-935-S | NYSNG Corp. N-917-S | NYSNG Corp. N-907-S | NYSNG Corp. N-915-S | NYSNG Corp. N-925-S |
| TOWNSHIP | | Corydon | Somerset | Brothers Valley | Westfield | Westfield | Westfield | Clymer | Clymer | Clymer | Clymer |
| QUADRANGLE | | Kinzua 14 | Meyersdale 3 | Meyersdale 2 | Elkland 39 | Elkland 40 | Elkland 41 | Gaines 111 | Gaines 108 | Gaines 110 | Gaines 115 |
| LATITUDE | | 10,300 ft. N 41° 55' | 11,546 ft. S 40° 00' | 14,300 ft. S 40° 00' | 10,800 ft. S 41° 55' | 9500 ft. S 41° 55' | 8700 ft. S 41° 55' | 13,000 ft. S 41° 55 | 5900 ft. N 41° 50' | 15,600 ft. S 41° 55' | 13,400 ft. S 41° 55' |
| LONGITUDE | | 2575 ft. W 78° 50' | 8100 ft. W 79° 00' | 10,900 ft. W 79° 00' | 5400 ft. E 77° 30' | 6800 ft. E 77° 30' | 4400 ft. E 77° 30' | 1100 ft. W 77° 30' | 1300 ft. E 77° 35' | 8600 ft. W 77° 30' | 6800 ft. W 77° 30' |
| DATE COMPLETED | | 10-19-64 | 8-2-64 | 3-16-64 | 1-27-64 | 4-1-64 | 4-16-64 | 12-31-63 | 1-27-64 | 12-16-63 | 4-7-64 |
| ELEVATION | | 2101KB | 2470RT | 2493KB | 1735 | 1504 | 1544 | 1854 | 1943 | 1853 | 1684 |
| TULLY | | 4030-4053 | | Mahantango - 7687- | 3709-3766 | 3554-3560 | 3677-3735 | 3764-3820 | 3963-4016 | 3811-3867 | 3770-3826 |
| ONONDAGA | LIMESTONE | 4355- | 8612- | 8635- | 4490- | 4338- | 4463- | 4545- | 4758- | 4585- | 4544- |
| | CHERT | | 8654- | 8657- | | | | | | | |
| ORISKANY | | 4430-<br>SW | 8744-<br>1500 Mcf<br>8802-30 | 8753-<br>gas 8800-8818<br>Shriver 8894 | 4506-<br>Gas | 4356-<br>Gas | 4476-<br>Gas | 4557-<br>Gas | 4774-<br>Gas | 4598-<br>Gas | 4564-<br>Gas |
| HELDERBERG | | 4448- | | 8950- | 4537- | 4388- | 4509- | 4584- | 4785- | 4624- | 4584- |
| SALINA | | | | | | | | | | | |
| GUELPH-LOCKPORT | | | | | | | | | | | |
| CLINTON | | | | | | | | | | | |
| MEDINA | | | | | | | | | | | |
| QUEENSTON | | | | | | | | | | | |
| TOTAL DEPTH | | 4462 | 8850 | 9105 | 4553 | 4403 | 4524 | 4591 | 4805 | 4642 | 4599 |
| DEEPEST FORMATION REACHED | | Helderberg | Oriskany | Helderberg | Helderberg | Helderberg | Helderberg | Helderberg | Helderberg | Helderberg | Helderberg |
| RESULT | | Abandoned | 7700 Mcf gas<br>AF<br>RP 3200 psi | 2400 Mcf gas<br>& 3 bbls SW<br>AF<br>RP 3225 psi<br>11 hrs. | Drilled for gas storage | Drilled for gas storage | Drilled for gas storage | Drilled for gas storage | Drilled for gas storage | Drilled for gas storage | Drilled for gas storage |

Table 12.—*Summarized records of deep wells, Continued*

Sheet 14

| MAP NUMBER | | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY Permit Number | | TIOGA 31 | TIOGA 30 | TIOGA 32 | TIOGA 26 | TIOGA 24 | WARREN 609 | WARREN 4380 | WESTMORELAND 83 | WESTMORELAND 388 | WESTMORELAND 405 |
| NAME OF WELL | | M. J. Roberts 3 | J. L. Trimmer 2 | J. L. Trimmer 3 | V. E. VanDerhoof 4 | Wanner 1 | Marsh-Childs 1 | E. S. Hanson 1 | P. C. Mc Donald 2 | Hempfield (Seanor) 1 | Eldemiller Ent., Inc. Tract 2 No. 1 |
| OPERATOR | | NYSNG Corp. N-926S | NYSNG Corp. N-919S | NYSNG Corp. N-924S | NYSNG Corp. N-912S | NYSNG. Corp. N-920S | Transamerican Petroleum Corp. | E. T. Matthews Kroh et al | J. C. Johnson | The Peoples Nat. Gas Co. | Peoples Nat. Gas Co. Alco Prod. |
| TOWNSHIP | | Clymer | Clymer | Clymer | Clymer | Clymer | Farmington | Farmington | Donegal | Hempfield | Unity |
| QUADRANGLE | | Gaines 116 | Gaines 112 | Gaines 114 | Gaines 109 | Gaines 113 | Warren 12 | Youngsville 5 | Claysville 2 | Greensburg 4 | Labrobe 26 |
| LATITUDE | | 10,900 ft. N 41° 50' | 16,000 ft. S 41° 55' | 14,000 ft. S 41° 55' | 8300 ft. N 41° 50' | 12,300 ft. N 41° 50' | 16,800 ft. S 42° 00' | 7600 ft. N 41° 55' | 15,000 ft. N 40° 05' | 7100 ft. N 40° 15' | 9000 ft. S 40° 20' |
| LONGITUDE | | 7200 ft. E 77° 35' | 11,600 ft. W 77° 30' | 9400 ft. W 77° 30' | 5400 ft. E 77° 35' | 9300 ft. E 77° 35' | 9400 ft. W 79° 10' | 5100 ft. W 79° 15' | 3800 ft. W 80° 25' | 4700 ft. W 79° 30' | 11,500 ft. W 79° 25' |
| DATE COMPLETED | | 3-23-64 | 2-25-64 | 3-19-64 | 12-23-63 | 2-5-64 | 6-15-64 | 9-11-64 | 6-10-64 | 4-14-64 | 7-8-64 |
| ELEVATION | | 1938 | 1990 | 1939 | 1968 | 2019 | 1634KB | 1810DF | 1162DF | 1246KB | 1187KB |
| TULLY | | 3953-4008 | 4083-4138 | 4082-4140 | 3870-3925 | 4036-4089 | 3375- | | | 7618- | 6792-6817 |
| ONONDAGA | LIMESTONE<br>CHERT | 4715- | 4858- | 4858- | 4638- | 4816- | 3605- | 3783-<br>SG at 3788 | | Fault at 8140± | 7321-<br>7341- |
| ORISKANY | | 4731- Gas | 4862- Gas | 4870- Gas | 4657- Gas | 4816- | 3740- | 3914 (Horizon) | | | 7490- |
| HELDERBERG | | 4750- | 4750- | 4895- | 4668- | 4837- | | | | | 7520- |
| SALINA | | | | | | | | 3972- | | | |
| GUELPH-LOCKPORT | | | | | | | SW at 4300 | 4474- | | | |
| CLINTON | | | | | | | Irondequoit? 4760-4768 | 4812-<br>Irondequoit- 4904- | | | |
| MEDINA | | | | | | | 4810- SG | 4945- | | | |
| QUEENSTON | | | | | | | 4954- | 5106- | | | |
| TOTAL DEPTH | | 4765 | 4908 | 4910 | 4681 | 4861 | 8130 | 5121 | 6371 | 8352 | 7540 |
| DEEPEST FORMATION REACHED | | Helderberg | Helderberg | Helderberg | Helderberg | Helderberg | Gatesburg | Queenston | Hamilton? | Hamilton | Helderberg |
| RESULT | | Drilled for gas storage | Drilled for gas storage | Drilled for gas storage | Drilled for gas storage | Drilled for gas storage | Mid. Ordovician limestone 7005-<br>Gatesburg 7835-<br>SSG 7840, 8000-8040 SW 8000-8040<br>Abandoned | Abandoned | Old well drilled deeper - Abandoned | Abandoned<br>1750 Mcf gas AF from shallow sands RP 840psi 1 hr. | 4500 Mcf gas AF<br>RP 3953 psi 24 hrs. |

## Table 12.—*Summarized records of deep wells, Continued*

Sheet 15

| MAP NUMBER | | 143 | 142 | 143 | 144 | 145 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| COUNTY Permit Number | | WESTMORELAND 416 | WESTMORELAND 408 | WESTMORELAND 400 | WESTMORELAND 396 | WESTMORELAND 380 | | | | | |
| NAME OF WELL | | L. B. Huff 8 | C. B. Keck 1 | N. Lemmon 1 | G. M. Miller 1 | Donald Smith 5 | | | | | |
| OPERATOR | | The Peoples Nat. Gas Co. | Peoples Nat. Gas Co. Alco Prod. | The Peoples Nat. Gas Co. | W. H. Haupt Co. | The Peoples Nat. Gas Co. | | | | | |
| TOWNSHIP | | Unity | Unity | Unity | Unity | Derry | | | | | |
| QUADRANGLE | | Latrobe 28 | Latrobe 27 | Latrobe 24 | Latrobe 23 | Latrobe 25 | | | | | |
| LATITUDE | | 11,400 ft. S 40° 20' | 1400 ft. S 40° 20' | 4700 ft. N 40° 20' | 5200 ft. S 40° 20' | 800 ft. N 40° 20' | | | | | |
| LONGITUDE | | 9300 ft. E 79° 30' | 5650 ft. W 79° 25' | 400 ft. W 79° 25' | 8600 ft. W 79° 25' | 550 ft. W 79° 15' | | | | | |
| DATE COMPLETED | | 12-8-64 | 8-11-64 | 5-14-64 | 5-5-64 | 7-21-64 | | | | | |
| ELEVATION | | 1369KB | 1440KB | 1218KB | 1427KB | 1936KB | | | | | |
| TULLY | | 7094-7112 | 7039-7057 | 6936-6954 | 7059-7076 | 6288-6342 | | | | | |
| ONONDAGA | LIMESTONE | 7718- | 7578- | 7481- | 7589- | 6966- | | | | | |
| | CHERT | 7739- | 7596- | 7500-<br>2477 Mcf at 7577, 7599 | 7608- | 6987- | | | | | |
| ORISKANY | | 7895- | 7748- | 7649- | 7759-<br>24 Mcf at 7762 | 7117- | | | | | |
| HELDERBERG | | 7926?- | 7778- | 7677?- | 7790- | 7202?- | | | | | |
| SALINA | | | | | | | | | | | |
| GUELPH-LOCKPORT | | | | | | | | | | | |
| CLINTON | | | | | | | | | | | |
| MEDINA | | | | | | | | | | | |
| QUEENSTON | | | | | | | | | | | |
| TOTAL DEPTH | | 7975 | 7805 | 7703 | 7809 | 7226 | | | | | |
| DEEPEST FORMATION REACHED | | Helderberg | Helderberg | Helderberg? | Helderberg | Helderberg? | | | | | |
| RESULT | | 5040 Mcf gas<br>AF<br>RP 3655 psi<br>24 hrs. | 6000 Mcf gas<br>AF<br>RP 3666 psi<br>7 days | 3844 Mcf gas<br>AF<br>RP 3977 psi<br>96 hrs. | 6327 Mcf gas<br>AF<br>RP 3980 psi | 1245 Mcf and<br>SW AF<br>RP 2915 psi<br>67 hrs.<br>Abandoned | | | | | |

Table 13.—*Deep well samples collected during 1964*
(Supplement to Information Circular No. 16 and Progress Reports 157, 158, 160, 165, and 166)

| *COUNTY Quadrangle & No.* | *Operator* | *Farm Name* | *Total Depth* | *Year Compl.* | *Sampled Interval* | *Deepest Formation Sampled* |
|---|---|---|---|---|---|---|
| BEDFORD | | | | | | |
| Clearville 19 | NYSNG #886 | Talbert Smith #1 | 5090 | 63 | 630-4480 | Oriskany |
| BRADFORD | | | | | | |
| Powell 3 | Obie Shaw et al | A. J. W. Headlee #1 | 4104 | 63 | 70-4105 | Helderberg |
| CARBON | | | | | | |
| Mauch Chunk 2 | Phillips Petroleum | Graver Est. #1 | 5385 | 64 | 0-5350 | Upper Silurian |
| CENTRE | | | | | | |
| Bellefonte 2 | NYSNG #943 | Lehigh Valley Coal #1 | 8200 | 64 | 60-8000 | Hamilton |
| Centre Hall 1 | Mobil Oil Co. | J. Franklin Long #1 | 15,662 | 64 | 20-15,662 | Well spudded in Gatesburg and bottomed in Mid. Ord. limestone |
| CLARION | | | | | | |
| Clarion 2 | Shaffer et al | J. A. Mays #1 | 7906 | 63 | 120-7890 | Queenston |
| Clarion 3 | Fairman Drlg. | Culbertson #1 | 5795 | 64 | 30-5785 | Oriskany |
| CLEARFIELD | | | | | | |
| Penfield 196 | NYSNG #723 | Pa. Tract 86 #1 | 7343 | 59 | 6700-7300 | Onondaga |
| Penfield 279 | Lee E. Minter | Pa. Tract 123 #1 | 6983 | 64 | 20-6970 | Helderberg |
| Penfield 281 | Lee E. Minter | Pa. Tract 123 #2 | 7081 | 64 | 110-7078 | Helderberg |
| CRAWFORD | | | | | | |
| Cambridge Springs 12 | Flanigan Bros. | Robert Hartenbach #1 | 2941 | 62 | 2800-2941 | Bass Island |
| Girard 122 | James Drlg. Co. | M. Miller #1 | 6337 | 64 | 4705-6363? | Gatesburg |
| Girard 128 | James Drlg. Co. | Sheehan (Slobodnajak) | 6424 | 64 | 2490-6424 | Gatesburg |
| Girard 129 | Ventura Oil Co. | Tyler #1 | 6352 | 64 | 4400-6340 | Gatesburg |
| Girard 178 | Transamerican Pet. | Sensabaugh #1 | 6109 | 65 | Samples not yet cut | |
| Girard 179 | Transamerican Pet. | Sprouse #2 | 6189 | 65 | Samples not yet cut | |
| Union City 6 | D. Garrett | Walter Morton #1 | 7440 | 64 | 40-7450 | Gatesburg |
| Union City 7 | D. Garrett | J. Marzka #1 | 7206 | 64 | 3400-7200 | Gatesburg |

| | | | | | | |
|---|---|---|---|---|---|---|
| ERIE | | | | | | |
| Erie 110 | Hammermill Paper Co. | Hammermill #2 | 5972 | 64 | 0-5972 | Precambrian schist |
| FAYETTE | | | | | | |
| Bruceton 8 | Sun Oil Co. | Grimes #1 | 8378 | 63 | 50-8378 | Shriver |
| Uniontown 6 | New Penn Devel., Wm. E. Snee et al | Leo F. Heyn #1 | 11,566 | 37, 64 | 0-6670<br>8420-11,370 | Rose Hill |
| JUNIATA | | | | | | |
| Mifflintown 1 | Shell Oil Co. | Lost Creek Rod & Gun #1 | 10,036 | 64 | 20-10,036 | Conococheague |
| LACKAWANNA | | | | | | |
| Dundaff 1 | Humble Oil & Ref. | Lally #1 | 5408 | 64 | Samples not yet cut | Upper Devonian |
| MERCER | | | | | | |
| Stoneboro 6 | Newmac Oil & Gas | J. P. Miller #1 | 5634 | 63 | 40-5644 | Queenston |
| SOMERSET | | | | | | |
| Meyersdale 2 | Shell Oil Co. | R. D. Shumaker #1 | 9105 | 64 | 10-9100 | Helderberg |
| WARREN | | | | | | |
| Warren 12 | Transamerican Pet. | Marsh-Childs #1 | 8130 | 64 | 30-7750 | Middle Ordovician limestones |
| Youngsville 5 | Matthews, Kroh, et al | E. S. Hanson #1 | 5121 | 64 | 4022-5118 | Queenston |
| WASHINGTON | | | | | | |
| Claysville 2 | J. C. Johnson | P. C. McDonald #2 | 6371 | 64 | 4500-5948 | Upper Devonian |
| WESTMORELAND | | | | | | |
| Latrobe 19 | Peoples Nat. Gas #4388 | R. E. White #1 | 7701 | 63 | 20-7690 | Oriskany |